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Benthic Fauna from Great Lakes Institute Cruises on Lake Erie - 1963, 1964, 1965

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September 1988

Canadian Technical Report of Fisheries and Aquatic Sciences No. 1635

Fisheries and Oceans Pêches et Océans

Canada

89-01010/

Canadian Technical Report of Fisheries and Aquatic Sciences

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and Aquatic Sciences 1635.

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@ Minister of Supply and Services Canada 1988
Cat. No. FS 97-6/1635 ISSN 0706-6457

correct citation for this report:

Barton, D.R. 1988. Benthic fauna from Great Lakes Institute cruises on Lake Erie - 1963, 1964, 1965. Can. Tech. Rep. Fish. Aquat. Sci., 1635. i-v + 61 pp.

Contract No. 02SE.FP921-7-0125

ABSTRACT

Barton, D.R. 1988. Benthic fauna from Great Lakes Institute cruises on Lake Erie - 1963, 1964, 1965. Can. Tech. Rep. Fish. Aquat. Sci., 1635. i-v + 61 pp.

The results of benthic invertebrate sampling on 24 cruises from Lake Erie during the years 1963 through 1965 were examined and compared with other published surveys. Data recorded by the original investigators at the Great Lakes Institute, University of Toronto, were analyzed from a total of 1175 samples, and the preserved Chironomidae and Oligochaeta in 370 of these samples were identified. A total of 69 taxa were recognized. Estimates of average numerical standing stock at individual stations over all cruises ranged from 30 to 5451 animals m^{-2}. Both abundance and variety of animals tended to decline from east to west and from nearshore to offshore. When averaged by basin, abundances were only one-tenth to one-third as large as those reported from other studies. This seems most likely due to the way the samples were handled prior to preservation. About 20-30% of the samples collected from large areas of the central and western basins during the months of June through August contained no living animals. The distributions of individual taxa were consistent with declining water quality from east to west in Lake Erie in the early 1960's.

RÉSUMÉ

Barton, D.R. 1988. Benthic fauna from Great Lakes Institute cruises on Lake Erie - 1963, 1964, 1965. Can. Tech. Rep. Fish. Aquat. Sci., 1635. i-v + 61 pp.

On examine les résultats de l'échantillonnage des invertébrés benthiques réalisé en 24 expéditions dans le lac Érié de 1963 à 1965, et on les compare avec les résultats publiés d'autres relevés. On a analysé les données des chercheurs qui ont commencé les travaux à l'Institut des Grands Lacs (Université de Toronto) en examinant 1175 échantillons dont 370 sont examinées pour les chironomides et les oligochètes qu'on a identifiés. En tout, on a identifié 69 taxons. On a estimé l'abondance moyenne dans chaque station pour toutes les expéditions : elle varie entre 30 et 5451 animaux m^{-2}. On a constaté que les animaux deviennent moins nombreux et moins variés lorsqu'on se déplace d'est en ouest et lorsqu'on s'éloigne des eaux littorales. Si l'on examine l'abondance moyenne par bassin, on constate qu'elle ne vaut qu'entre un dixième et deux tiers des valeurs déterminées lors d'autres études. Selon toute vraisemblance, il semble que cette différence soit due à la façon dont on a traité les échantillons avant de les préparer. Il n'y avait pas d'animaux vivants dans environ 20-30 % des échantillons prélevés de juin à août dans de grandes parties des bassins du centre et de l'ouest. La distribution des taxons concorde avec la braisse de le qualité des eaux observée d'est en ouest dans le lac Érié au début des années 1960.

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INTRODUCTION

A large number of cruises on the Great Lakes were undertaken by the Great Lakes Institute (GLI) of the University of Toronto from 1960 through 1970. The kinds of limnological and biological data collected have been summarized by Rodgers (1972). These GLI surveys include some of the most extensive collections ever made from the open waters of the Great Lakes, especially since cruises were made at all seasons. With the exceptions of reports by Brinkhurst et al. (1968) and Barton (1986), none of the biological data from these cruises has been published in a form accessible to the research community.

The results of the GLI benthic sampling were originally recorded by Dr. F. Ide and his assistants on a series of index cards as counts of major groups of organisms and some taxonomic information for each sample. Some of the original samples of animals are now at Canada Centre for Inland Waters. Barton (1986) examined the cards and existing samples collected from Lake Huron and Georgian Bay in 1963 and 1964. Comparison of the results with those of other published benthic surveys of Lake Huron suggested that the GLI data constituted a valuable historical record which should be made more widely available. Since only a single sample was taken at each station visited and the samples were held for varying periods of time before being sieved and preserved, individual samples, or even single cruises were not necessarily very informative. This problem was minimized by treating sequential cruises as replicates.

With these encouraging results in hand, analysis of the data from benthic sampling on 24 cruises of Lake Erie during the years 1963 through 1965 was undertaken in 1987. This report describes the results of that analysis and presents the original data as appendices.

METHODS

The original data records consist of a series of cards, one per station sampled each cruise, listing counts and estimates of volume of the Amphipoda (by species), other Crustacea, Oligochaeta, Chironomidae, Bivalvia (by genus), Gastropoda (by species) and other groups (Nematoda, Turbellaria, Insecta, etc.). Other notations include the date of sampling, station depth, nature of the sediments and other debris brought up by the Franklin-Anderson grab ($0.028 m^2$). A total of 1175 cards from 24 cruises were tabulated (Table 1).

These data were used to compile summary sheets for each cruise after standardizing the station numbers using the designations of cruise 63-18 (fig. 1). The summary sheets were used to compile a list of taxa, their frequencies of occurrence and the total number of taxa $sample^{-1}$. The sheets were combined listing the following variables: cruise, station, depth, Oligochaeta, Hirudinea, Pontoporeia, Asellus, Chironomidae, Pisidium, Sphaerium, Amnicola limosa, Bythinia tentaculata, Valvata sincera, V. tricarinata and total number of animals in the sample. Other taxa were tabulated separately. Rare taxa (i.e. occurring in <10% of samples) were deleted from the analysis.

Animals from a total of 370 samples collected during 1963-1965 were available for examination. Oligochaetes, chironomids and snails in these samples were identified, counted and the counts checked against the card records. In most cases Stylodrilus heringianus, Spirosperma ferox, Procladius and 4 types of Chironomus larvae could be recognized under a dissecting microscope; other worms and chironomids were mounted on slides and identified following Brinkhurst (1986), Jackson (1977) and Saether (1973; 1975). Many samples contained a viscous orange material which adhered to the animals and hampered identification, especially of chironomid larvae.

The distributions of common Chironomidae and Oligochaeta were plotted using arithmetic station means of the samples actually examined. The mean abundance of other taxa (Crustacea, Mollusca, etc.) at each station was calculated from the combined card records. Total counts (x) were transformed as $(x + 0.5)^{0.5}$ before calculating means for each station by season (winter = November-April, spring = May -June, summer = July-August, autumn = September-October) and basin (Eastern = stations 1-27, Central = stations 28-72, Western = stations 73-83).

RESULTS

A total of 67 taxa were identified, either from the card records (28) or among the preserved samples (21 Oligochaeta, 18 Chironomidae) (Table 2). The most common organisms, occurring in >10% of all samples examined, were immature tubificids, S. ferox, Pisidium spp., Sphaerium spp., Chironomus spp., Procladius, Limnodrilus hoffmeisteri, Pontoporeia, and S. heringianus. Other insects were rarely collected: nymphs of Hexagenia were found in 10 samples and Caenis in one; Trichoptera occurred in 9 samples and included larvae of Molanna in two and Polycentropus in one.

Common taxa tended to be either widespread, or more or less confined to one basin. Ubiquitous taxa included Aulodrilus pluriseta, L. hoffmeisteri (fig. 2), sphaeriids (fig 3), Amnicola limosa, Valvata tricarinata (fig. 4), Procladius and Chironomus spp. (fig. 5). Of these, A. limosa and Procladius were found almost exclusively at depths <15m, and only Pisidium was common at the deepest stations in the eastern basin. Gammarus fasciatus was collected from all 3 basins, but was relatively rare in the western half of the lake (fig. 7). Single caddisfly larvae or pupae were found at 7 widely scattered stations (fig. 8).

Three taxa were found almost exclusively in the eastern basin: S. heringianus (fig. 2), Pontoporeia (fig. 7) and Heterotrissocladius (mostly H. changi) (fig. 5). Potamothrix vejdovskyi was found throughout the lake but was most abundant in the eastern basin (fig. 2). One or two nymphs of Hexagenia were collected per sample from 6 stations along the shores of the eastern basin, and at station 67 south of Point Pelee (fig. 8).

S. ferox, the most common, and readily recognizable oligochaete, was most abundant and frequently collected in the central basin, being absent only from a few stations along the south shore (fig. 2). Similarly, Tanytarsini (90% Tanytarsus, 10% Micropsectra) were common only in the central basin and at the most westerly stations in the eastern basin (fig. 6). The amphipod Hyalella azteca was common only at station 27; individuals were found at 7 other stations (fig. 7). These taxa were absent or very rare in the western basin, from which Asellus (fig. 7), Cryptochironomus, Paracladopelma (fig. 6) and Valvata sincera (fig. 4) were completely absent. Bythinia tentaculata was unusual in being common only at the eastern and western ends of the lake (fig. 4).

The total abundance of benthic animals (mean number m^{-2}) was significantly greater in the eastern basin than in the rest of the lake (ANOVA: $F=33.98$; $df=2,1171$; $p<0.001$), and in winter than at other seasons ($F=14.49$, $df=3$, 1170, $p<0.001$):

	BASIN		
	Western	Central	Eastern
Winter	739 ± 1474 (34)	1196 ± 2085 (118)	2934 ± 4630 (64)
Spring	792 ± 1921 (44)	739 ± 1506 (183)	1585 ± 2549 (109)
Summer	368 ± 721 (38)	428 ± 746 (227)	1167 ± 2492 (134)
Autumn	560 ± 878 (23)	682 ± 1149 (123)	850 ± 1171 (77)

(Values are the mean number of animals m^{-2} ± S.D. The number of samples upon which each mean is based are in parentheses). Stations 23 and 17 supported the largest standing stocks with overall means of 5026 and 5451 animals m^{-2}, respectively (fig. 9). The smallest mean abundance of benthic invertebrates was recorded at station 37 near Ashtabula, only 31 m^{-2} in the 14 samples collected.

Abundances of benthic animals were low in the central and western basins throughout the study period, but especially in summer. This was in part due to the high frequency of samples containing no animals collected during July and August. In the central basin such samples came mainly from an area represented by stations 37-46, 48-64 and 69-72; in the western basin 0-counts occurred mainly at stations 75-81. The percentages of samples containing no animals from these two areas were significantly different by season:

	Winter	Spring	Summer	Autumn	Chi- squared	
Central	13.7	22.2	31.6	17.4	8.47	$p<0.05$
Western	10.5	25.0	29.4	14.3	11.91	$p<0.01$

Comparable values for the eastern basin were: 16, 9.2, 9.7 and 13.0 %. These too, were significantly different but at most were only about as large as the lowest proportions in the rest of the lake.

Counts of animals in the preserved samples were generally the same or very close to the values on the card records. Numbers of oligochaetes recorded on the cards appeared to be inflated by about 10-15%, either due to the inclusion of larger fragments, or to loss of individuals during handling. Serious discrepancies were found among the results of cruises 64-1 and 65-1, suggesting that all, or some of the representatives of certain groups had been removed from some of the vials, although there was no mention of this in any of the records (Brinkhurst et. al. 1965). Groups involved were Amphipoda, Oligochaeta and Chironomidae. Thus, the abundances of individual species of the oligochaetes and chironomids plotted in figures 2, 5 and 6 are slightly low for certain stations.

DISCUSSION

The benthic fauna of Lake Erie sampled during 1963-65 was dominated by Tubificidae, Sphaeriidae, Chironomidae and, in the eastern basin, Pontoporeia. Both standing stocks and diversity were greatest near shore and declined toward the centre of each basin. East-west changes in the benthic fauna were consistent with generally accepted trends in water quality at that time: diversity was lowest in the western basin where tubificids, especially L. hoffmeisteri, were the dominant organisms. The fauna of the central basin was dominated by Chironomus spp. and S. ferox, the latter usually considered to be characteristic of mesotrophy (Mozley and Howmiller 1977). The relative abundances of S. heringianus, Heterotrissocladius and Pontoporeia in the eastern basin suggest more oligotrophic conditions.

These results are generally consistent with those of other published benthic studies of Lake Erie, but differ substantially in several respects. The most striking difference is in the abundances of benthic animals estimated from the GLI data, which were very low. The only studies done at about the same time, the early 1960's, were confined to the western basin: Carr and Hiltunen (1965) found

an average of 2750 animals m^{-2} at their open-lake stations in June 1961, and 10,322 m^{-2} in the vicinity of the Detroit River. Britt et al. (1973) reported an average of 830 m^{-2} exclusive of oligochaetes at 6 stations in the island area from 1959-65; when worms were counted in a few representative samples, average benthic abundance rose to 7900 m^{-2}. In contrast, the mean standing stock for the western basin from the GLI collections was only 625 animals m^{-2}, about an order of magnitude less than reported by other investigators.

The central and eastern basins have been much less studied; the only comparable surveys are those conducted in 1973-74 by Britt at al. (1980) and in 1973-76 by Flint and Merckel (1978). These studies reported average standing stocks of all benthic invertebrates to be 3665 m^{-2} in the central basin, and 8278 m^{-2} in the eastern basin. Corresponding values from 1963-65 were considerably smaller - 703 and 1517 m^{-2}. These results tend to support the low opinion of the quantitative reliability of the GLI collections expressed by Brinkhurst (1969), but differ sharply from the results of similar comparisons for Lake Huron and Georgian Bay (Barton 1986). When samples from various GLI cruises were treated as station replicates, standing stocks in Lake Huron were similar to, or slightly higher than, those reported from other studies using comparable methods.

In part, the higher abundances in Lake Erie in 1973-74 are attributable to the use of finer sieves (290 um apertures) than in 1963-65 (590 um), but this was approximately the same size used by Carr and Hiltunen (1965) so cannot explain the differences for the western basin. It seems unlikely that the use of the Franklin-Anderson grab for the GLI sampling was totally responsible in view of the comparisons for Lake Huron. The way in which the samples were handled was the same for all GLI cruises on the Great Lakes, but the consequences of those procedures may have been different.

As each sample was collected, the contents of the grab were emptied into a can which was capped and stored in a walk-in cooler until the samples could be returned to the laboratory. Then the samples were placed in an elutriating device to separate the animals from the sediments. According to Brinkhurst (pers. comm.), this process resulted in the loss of a large fraction of the Oligochaeta, mainly through fragmentation. Since oligochaetes were the dominant organisms throughout most of Lake Erie in the early 1960's, this could have resulted in significant losses. Amphipods were the most abundant animals in most of Lake Huron at the time. In addition, since the organic content of Lake Erie sediments was likely much greater than in Lake Huron, and sediment temperatures are higher in the shallower lake, mortality due to anoxia in the cans was probably much greater in the Lake Erie samples. Decaying animals are even more likely to be lost during vigorous elutriation. About 14% of all samples recorded on cards contained no animals. Deletion of these from the data set made virtually no difference to the mean total numbers of animals by basin or season. This suggests that if mortality during storage led to the loss of animals, it was a general phenomenon, not confined to certain samples.

Despite these quantitative shortcomings, the general patterns of seasonal and spatial distribution, as well as the qualitative composition of the fauna, revealed by the results of the GLI cruises are similar to those reported from other studies of Lake Erie. Flint and Merckel (1978) reported a decline in total benthic densities in late summer as was observed in the GLI data. The areas of the central and western basins which had extremely low invertebrate standing stocks in summer, and from which many taxa were completely absent, are those which have been shown to become anoxic during some periods of summer stratification (Beeton 1963, Carr et al. 1965, Davis 1966). A large portion of the hypolimnion in the central basin of Lake Erie continued to go anoxic in the late summer during the 1970's (Burns, 1976). This anoxia

had a major impact on the organisms capable of inhabiting the area. Hartley (1968) reported that these areas are eddies in the bottom currents of the lake where organic matter accumulates. This material enters the lake from the Detroit and Maumee Rivers in the western basin, and from cities and rivers along the south shore in the central basin. The particularly rich fauna found at most stations on the transect south from Point Pelee may reflect a smaller eddy of less enriched water leaving the western basin. The high hydrodynamic energy zone on the Pelee-Lorraine sill (Thomas et al. 1976) influences both the sediment size and currents to which the local benthic fauna are exposed. Similarly the rich fauna at stations 23 and 17 (greater than 5000 animals m^{-2}) occurred on the higher energy sediments on the Long Point - Erie sill between the central and eastern basins (Thomas et al. 1976).

Hexagenia, the dominant organism in soft sediments in the western basin prior to 1953 (Britt 1955, Wright 1955, Wood 1963, Carr and Hiltunen 1965), was represented in the western basin by a single nymph collected south of Point Pelee. A few individuals were found at nearshore stations in the eastern basin, virtually the same distribution reported by Veal and Osmond (1968) from sampling during 1967. The polychaete Manayunkia speciosa has been known from the western basin since 1936 (Krecker 1939) and was abundant in the plume of the Detroit River in 1961 (Hiltunen 1967). Britt (1965) associated this species with connecting channels, but the GLI data show it to have been distributed throughout Lake Erie by 1965. The most common species in the central basin, S. ferox, was only found in the western basin at the mouth of the Detroit River, as was also reported by Hiltunen (1969). The distributions of Coelotanypus, Quistadrilus multisetosus and Branchiura sowerbyi were also consistent with other published records, all being confined to the western basin. Wood (1953) reported that molluscs were more abundant in the western half of the western basin during 1951-52, and that the most common species were Sphaerium corneum and B. tentaculata. This appears to have still been true in the early 1960's.

The data reported here include (as card records) the 5 cruises used by Brinkhurst et al. (1968) to illustrate the distributions of oligochaetes, chironomids and sphaeriids in Lakes Erie, Ontario and Huron. Since samples from a larger number of cruises were examined for the present study, most of these worms and chironomids were found to occur at more stations than in the earlier report. It is probably unwise to put much faith in the absolute abundances of these taxa (for the reasons described above), but comparisons with other published surveys suggest that the general patterns of distribution should be valid for comparison with any future studies. The original card records probably constitute the most reliable portion of the data since relatively few of the actual samples still exist, and animals seem to have been removed from some of these samples.

ACKNOWLEDGEMENTS

This report was prepared under DSS contract 02SE.FP921-7-0125 under the scientific authority of R. M. Dermott, Fisheries and Oceans, Bayfield Institute. Special thanks also go to Dr. F. Ide and his assistants who sampled, sorted, recorded and preserved the original collections.

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Table 1. Sources of data used to prepare this report.

Cruise	Dates	#of cards	#of vials
63-3	3-7 Jun	76	0
63-5	22-26 Jun	10	11
63-6	2-5 Jul	31	30
63-7	22-26 Jul	37	35
63-10	26-29 Aug	79	0
63-13	30 Sep-4 Oct	71	0
63-16	21-24 Oct	77	0
63-18	19-24 Nov	81	0
64-1	23-28 Apr	17	17
64-4	26-28 May	17	0
64-6	29 Jun-2 Jul	17	15
64-7	4-7 Aug	19	0
64-9	7-9 Oct	3	4
64-10	9-12 Nov	17	18
64-11	9-11 Dec	13	13
65-1	19-23 Apr	67	65
65-2	10-13 May	66	0
65-3	31 May-4 Jun	70	0
65-4	21-25 Jun	80	0
65-6	10-13 Jul	81	77
65-8	3-6 Aug	79	0
65-10	23-26 Aug	74	0
65-11	13-17 Sep	72	67
65-12	15-19 Nov	21	18

Table 2. List of invertebrate taxa and their frequencies of occurrence in samples from GLI cruises on Lake Erie, 1963-1965. Maximum number of samples for Oligochaeta and Chironomidae = 370. Maximum numbers of occurrences for other taxa = 1175.

TAXON	FREQUENCY
Coelenterata	
Hydra	2
Platyhelminthes	
Hydrolimax grisea	5
Rhabdocoela	3
Nematoda	10
Polychaeta	
Manayunkia speciosa	12
Oligochaeta	
Lumbriculidae	
Lumbriculus variegatus	3
Stylodrilus heringianus	38
Naididae	
Ophidonais serpentina	1
Slavina appendiculata	1
Tubificidae	
Aulodrilus americanus	14
A. limnobius	2
A. pluriseta	30
Branchiura sowerbyi	6
Isochaetides curvisetosus	2
Limnodrilus cervix	14
L. claparedeanus	5
L. hoffmeisteri	62
L. maumeensis	1
L. profundicola	1
Potamothrix moldaviensis	13
P. vejdovskyi	17
Quistadrilus multisetosus	2
Spirosperma ferox	150
Tubifex ignotus	2
T. tubifex	10
immature with hair setae	41
immature without hair setae	184
Hirudinea	
Erpobdella punctata	2
Helobdella stagnalis	23
unidentifiable	6

Table 2 (cont.)

	FREQUENCY
Mollusca	
Bivalvia	
Musculium	22
Pisidium	295
Sphaerium	181
Gastropoda	
Amnicola limosa	66
Bithynia tentaculata	39
Gyraulus parvus	5
Lymnaea sp.	2
Marstonia decepta	8
Physella gyrina	4
Pleurocera acuta	2
Valvata lewisi	8
V. sincera	105
V. tricarinata	55
Crustacea	
Isopoda	
Asellus racovitzai	130
Amphipoda	
Gammarus fasciatus	79
Hyalella azteca	10
Pontoporeia hoyi	173
Insecta	
Caenis	1
Hexagenia	10
Molanna	7
Polycentropus	1
Chironomidae	
Coelotanypus	4
Procladius	66
Monodiamesa depectinata	1
M. tuberculata	3
Heterotrissocladius changi	18
H. latilaminus	3
Chironomus fluviatilis-group	37
C. plumosus-group	37
C. sp. 1	32
C. sp. 2	3
Cryptochironomus	15
Cryptotendipes	1
Paracladopelma galaptera	3
P. winnelli	9
Polypedilum scalaenum	2
Pseudochironomus	3
Micropsectra	5
Tanytarsus	21

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Figure 1. Location of stations sampled during Great Lakes Institute cruises during 1963 through 1965.

Figure 2. Distributions of common Oligochaeta from samples examined (mean number sample^{-1}, 1963-1965).

Figure 3. Distributions of common Sphaeriidae from card records (mean number sample^{-1}, 1963-65).

Figure 4. Distributions of common Gastropoda from card records (mean number sample^{-1}, 1963-1965).

Figure 5. Distributions of common Chironomidae from samples examined (mean number sample^{-1}, 1963-1965).

Figure 6. Distributions of other Chironomidae from samples examined (mean number sample^{-1}, 1963-1965).

Figure 7. Distributions of common Crustacea from card records (mean number sample^{-1}, 1963-1965).

Figure 8. Distributions of Polychaeta, Ephemeroptera and Trichoptera from card records (mean number sample^{-1}, 1963-1965).

Figure 9. Average abundances (mean number sample^{-1},) of benthic invertebrates in Lake Erie during winter, spring, summer and autumn 1963-1965.

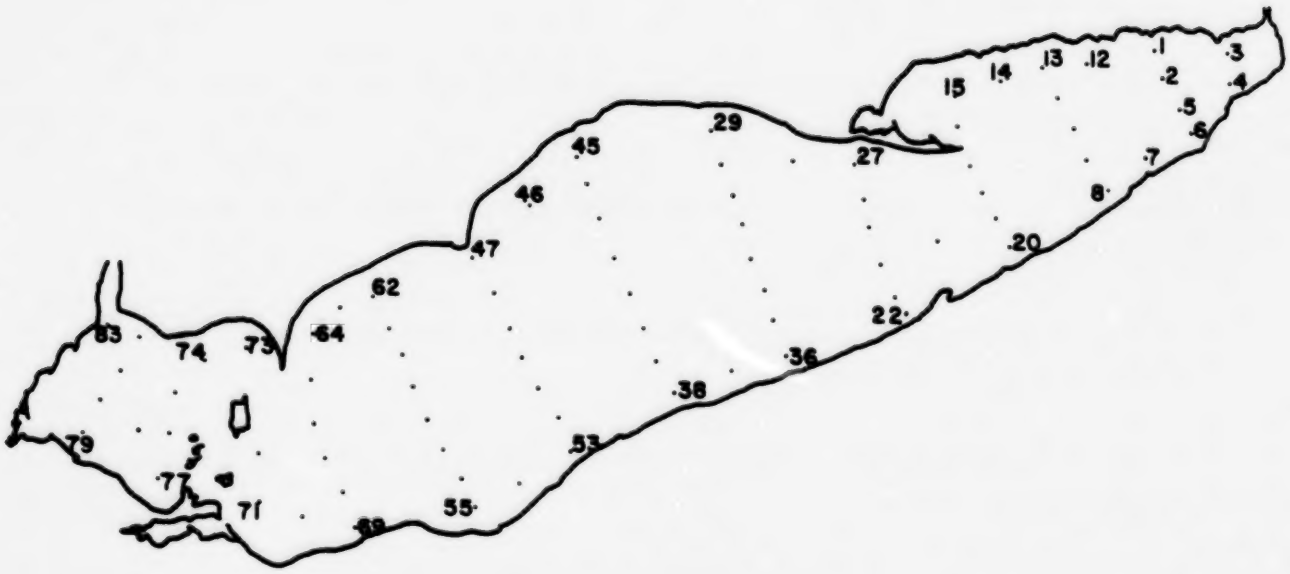

Figure 1. Location of stations sampled during Great Lakes Institute cruises during 1963 through 1965.

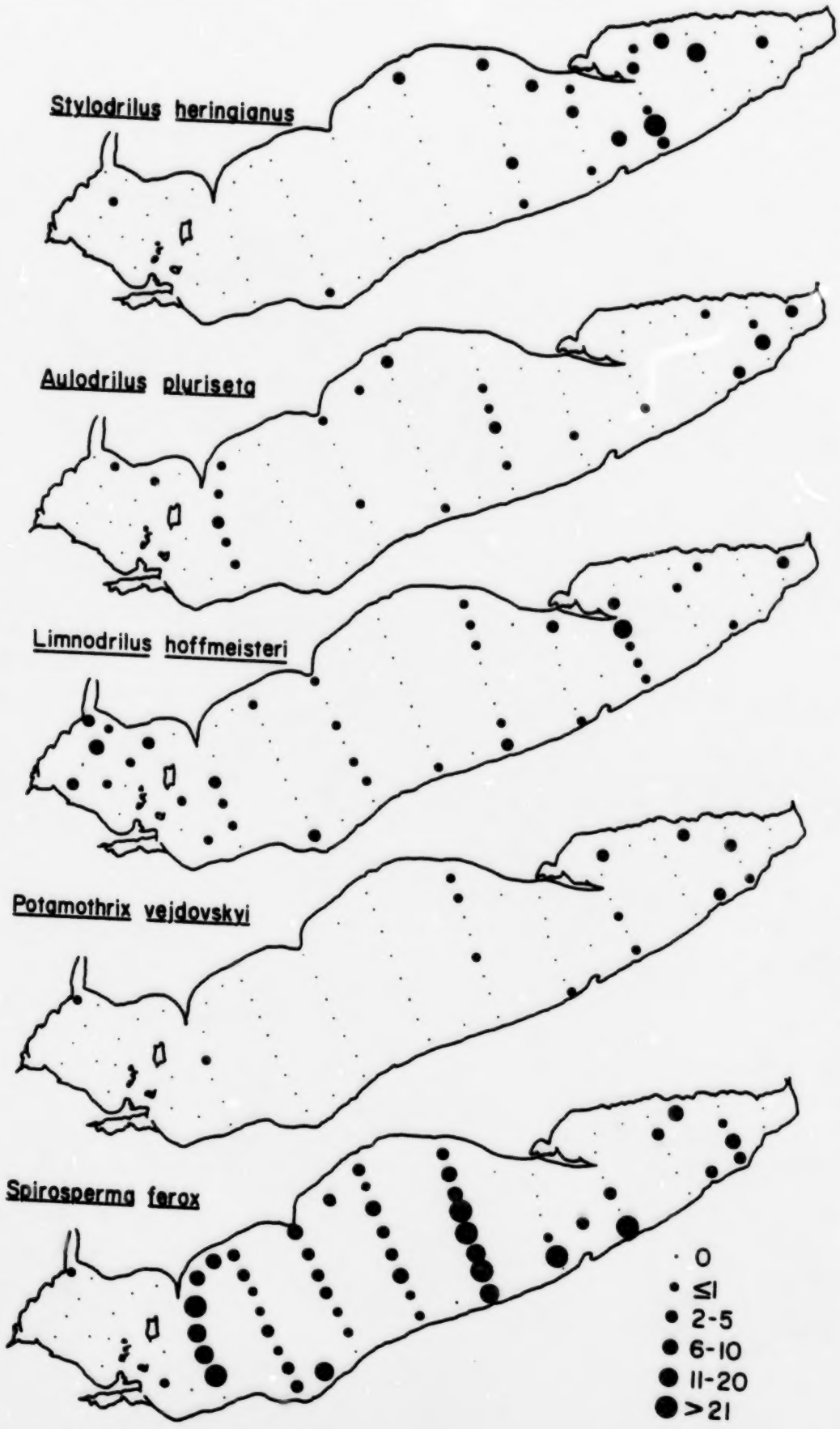

Figure 2. Distributions of common Oligochaeta from samples examined (mean number sample^{-1}, 1963-1965).

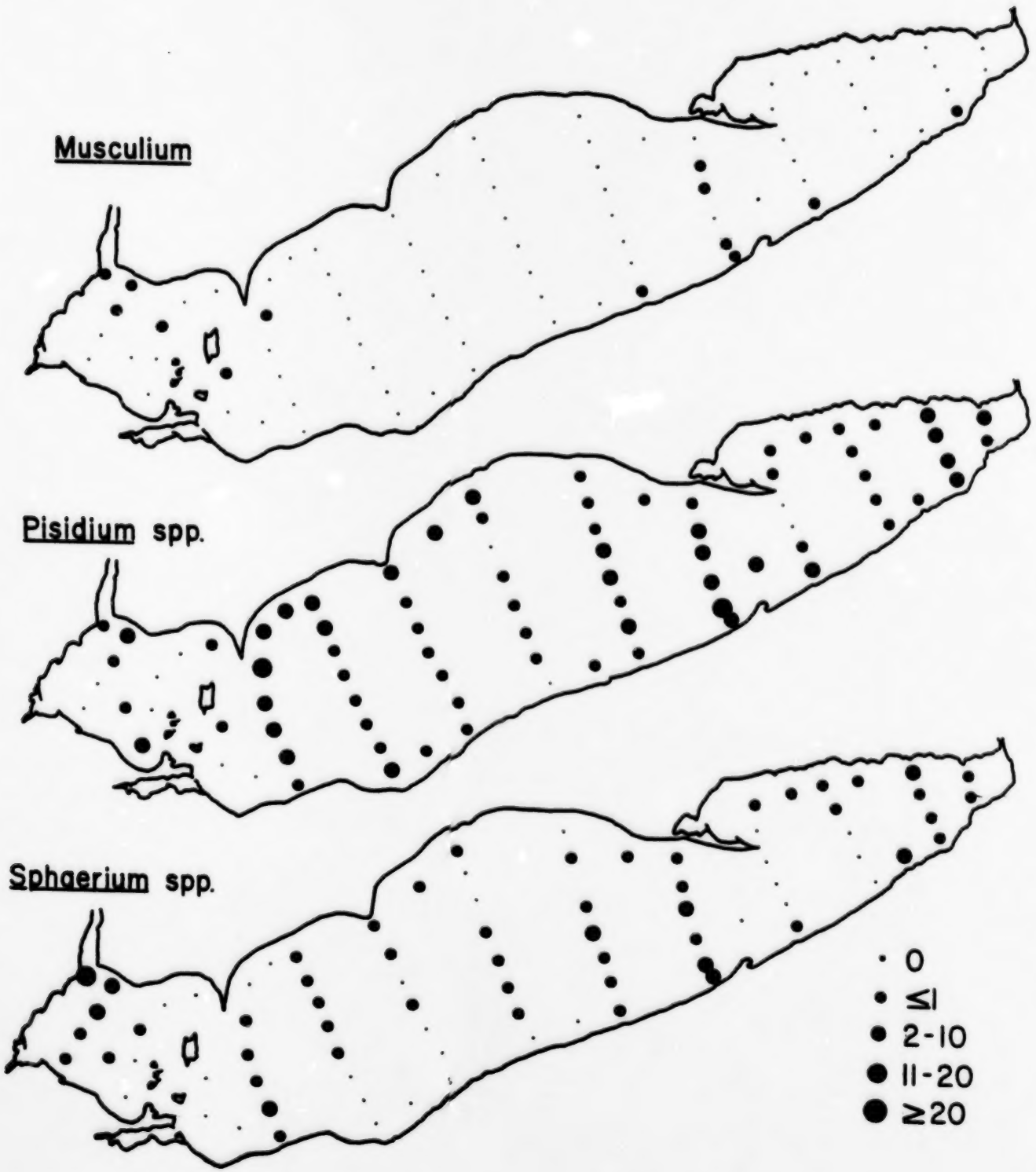

Figure 3. Distributions of common Sphaeriidae from card records (mean number sample^{-1}, 1963-65).

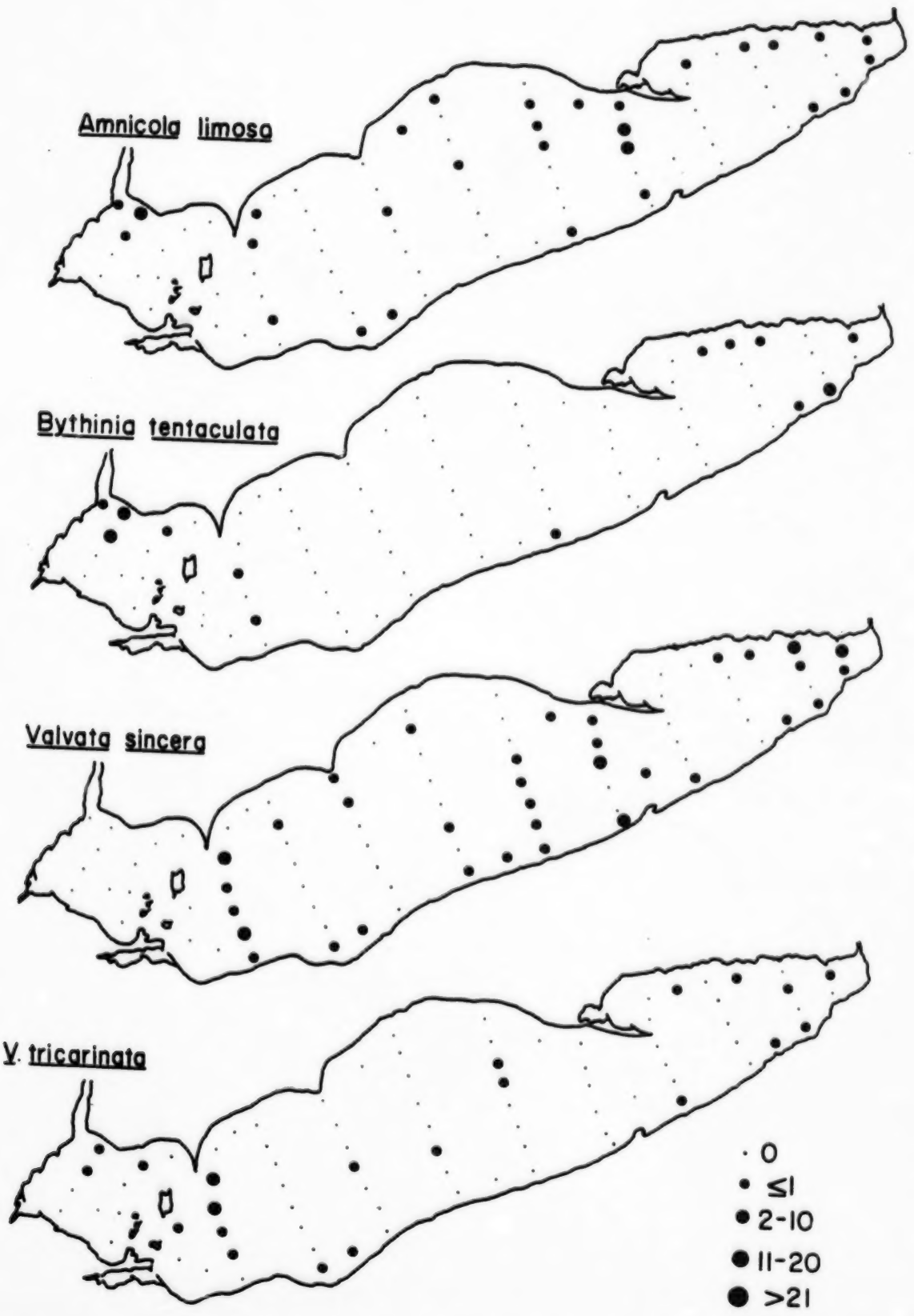

Figure 4. Distributions of common Gastropoda from card records (mean number sample^{-1}, 1963-1965).

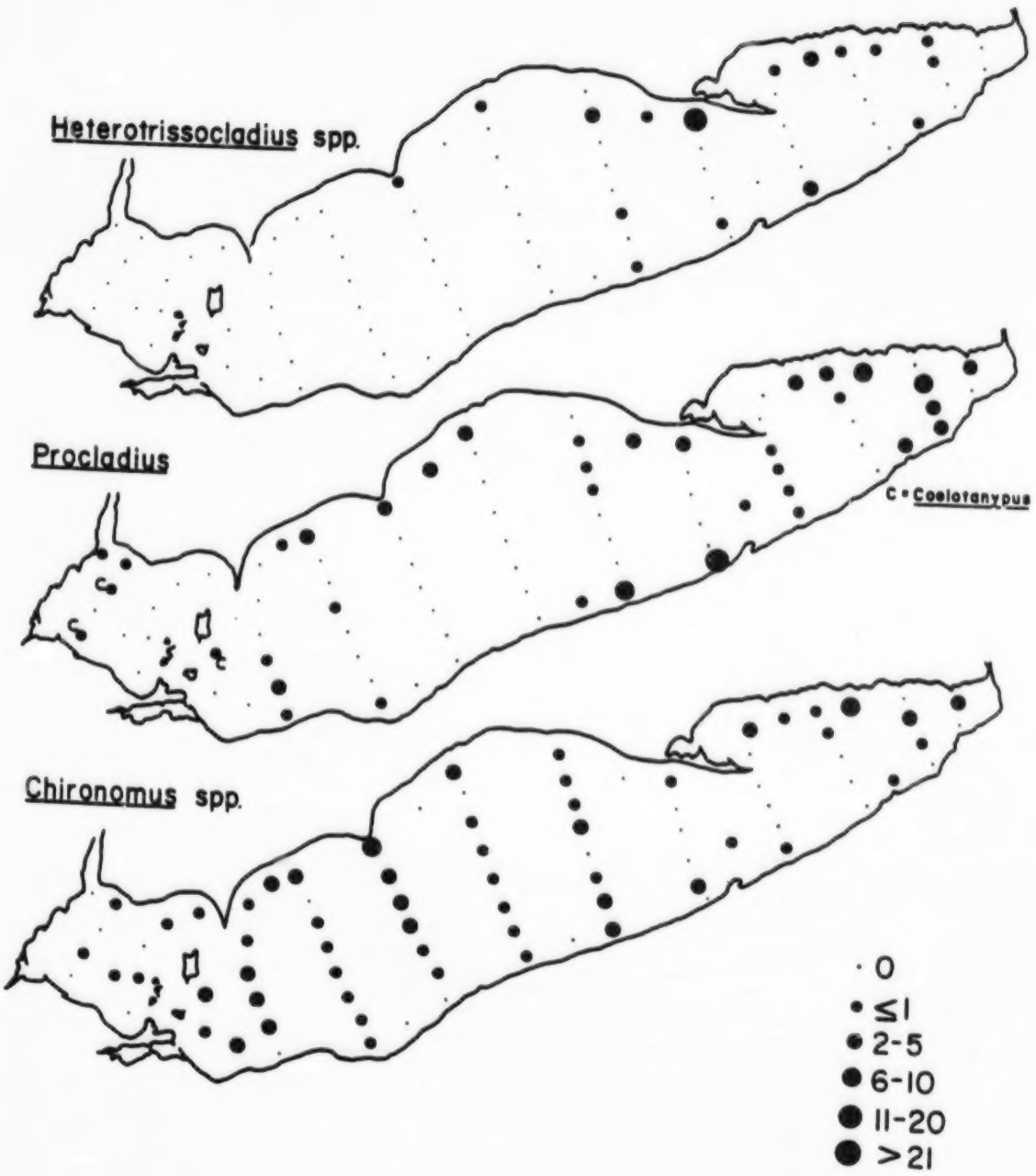

Figure 5. Distributions of common Chironomidae from samples examined (mean number sample^{-1}, 1963-1965).

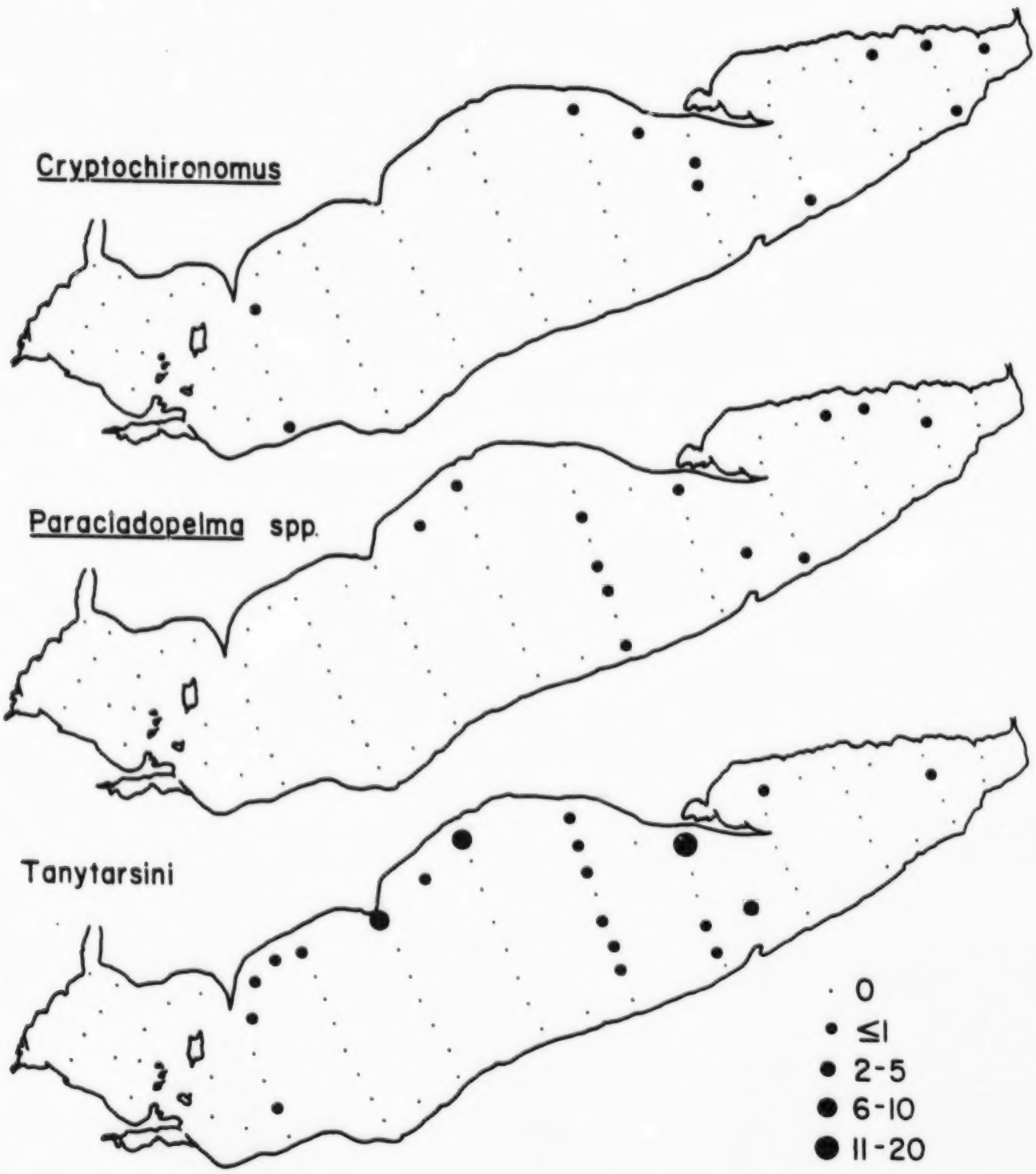

Figure 6. Distributions of other Chironomidae from samples examined (mean number sample^{-1}, 1963-1965).

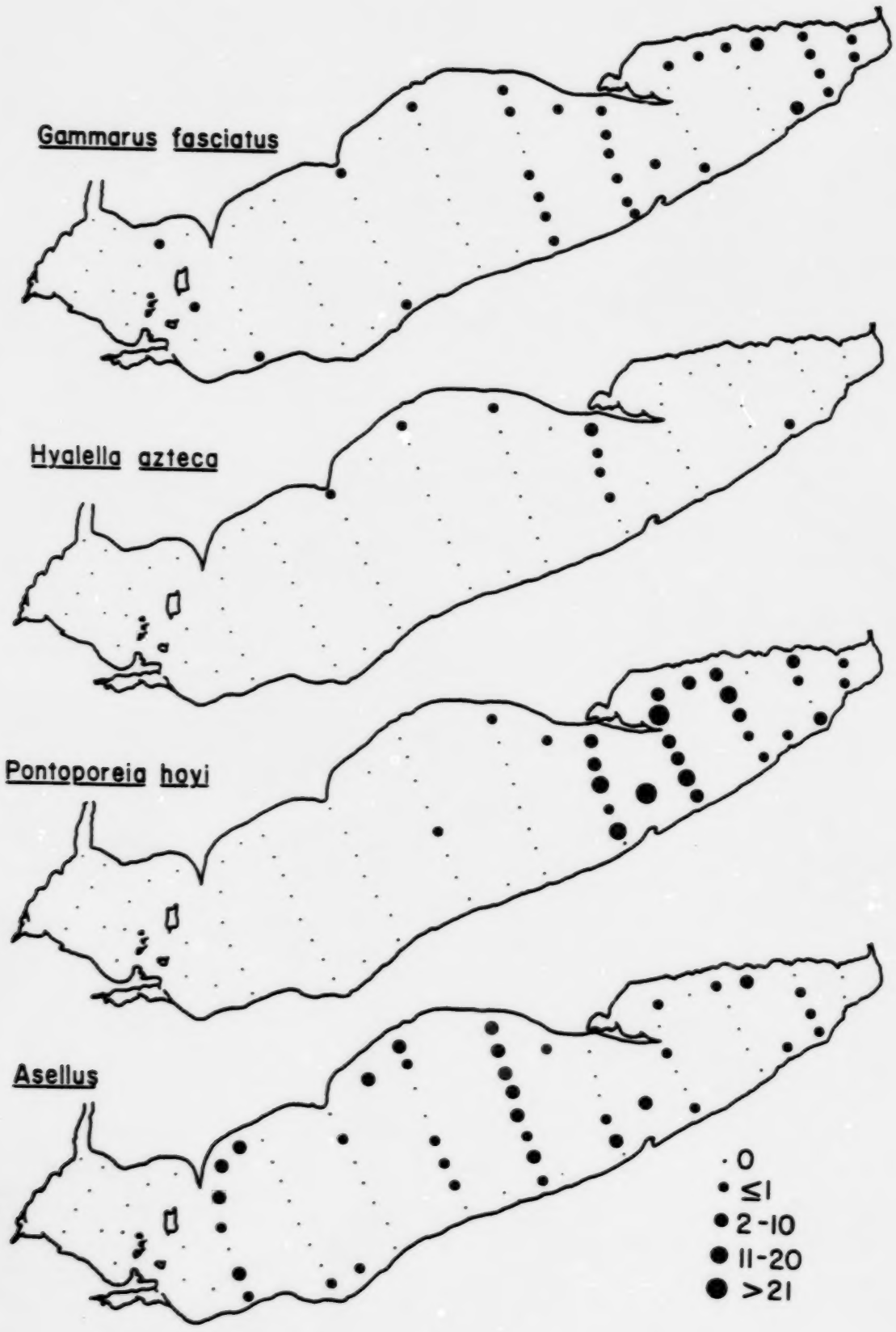

Figure 7. Distributions of common Crustacea from card records (mean number sample^{-1}, 1963-1965).

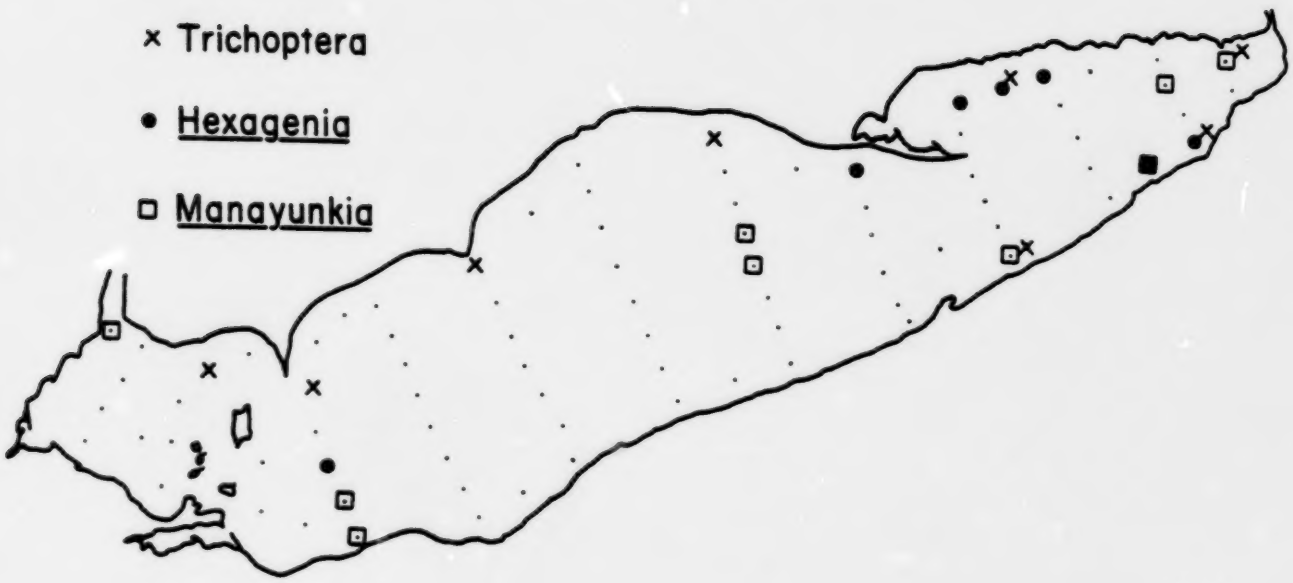

Figure 8. Distributions of Polychaeta, Ephemeroptera and Trichoptera from card records (mean number sample^{-1}, 1963-1965).

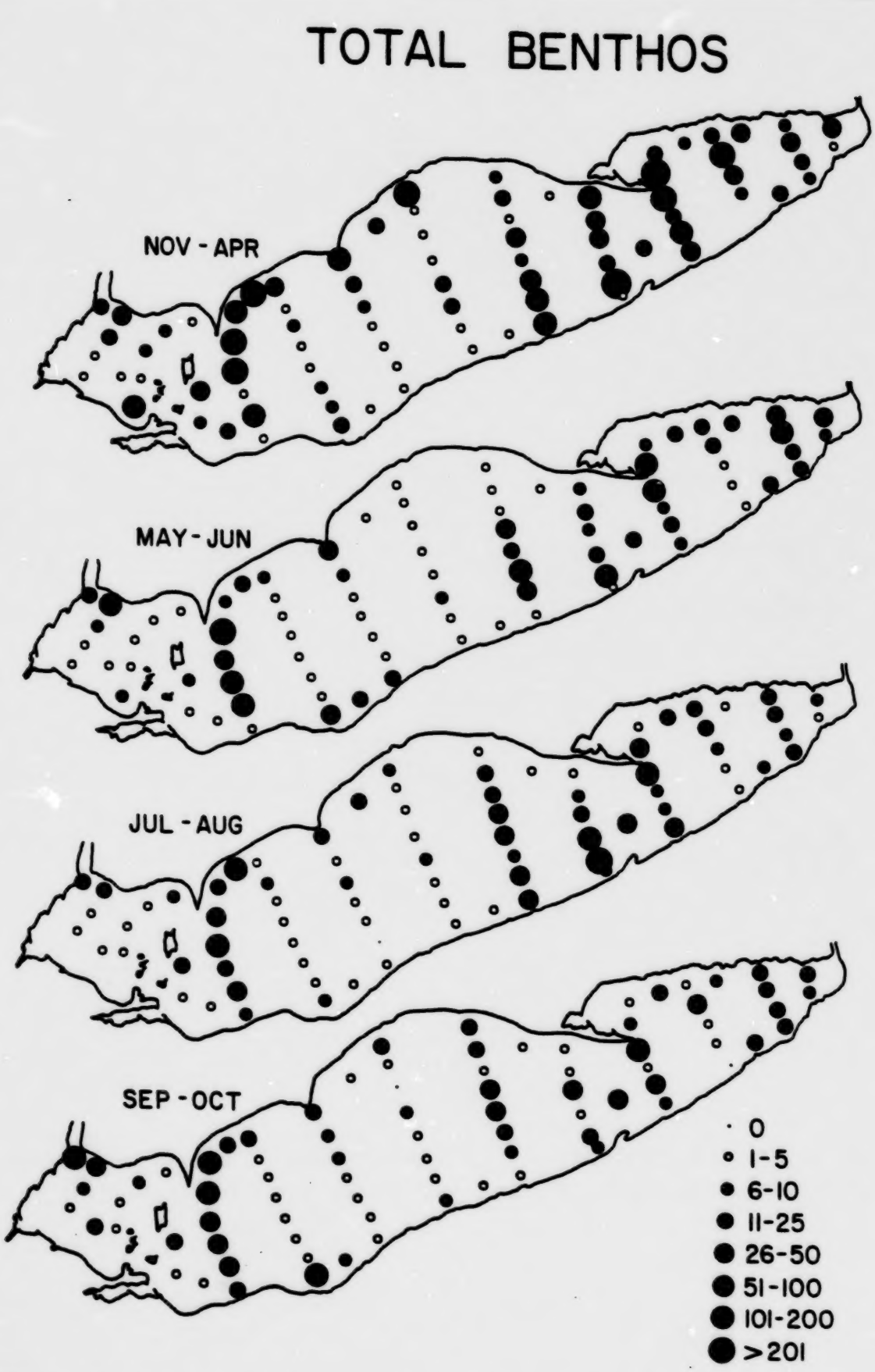

Figure 9. Average abundances (mean number sample^{-1},) of benthic invertebrates in Lake Erie during winter, spring, summer and autumn 1963-1965.

APPENDIX 1. Numbers of individuals of rare taxa collected during GLI cruises on Lake Erie, 1963-1965.

Taxon	Cruise	Station	Number
Manayunkia speciosa	64-10	83	23
	65-2	3	19
		7	4
		32	1
		33	2
	65-3	7	3
		20	2
		32	1
	65-4	68	4
		69	1
	65-11	68	7
	65-12	2	11
Musculium	63-3	81	1
	63-6	22	1
	63-7	82	1
	63-10	23	1
		65	1
	63-18	6	1
	65-1	72	5
	65-3	83	2
	65-4	82	2
	65-6	6	1
		36	4
		72	1
		82	2
	65-8	6	1
		25	1
		82	1
	65-10	20	1
		26	1
		75	1
	65-11	6	2
		25	1
	65-12	83	4
Hyalella azteca	63-6	26	1
	63-13	7	1
	63-16	29	1
	63-18	24	2
		25	1
	65-1	27	27
	65-4	27	8
	65-2	47	1

APPENDIX 1.(cont.)

	Cruise	Station	Number
Gammarus fasciatus	63-6	26	1
	63-7	7	1
	63-10	20	3
		23	1
	63-13	6	4
		7	2
		23	1
		27	1
		29	1
		36	1
	63-16	7	2
		13	1
		22	2
		30	10
		74	1
	63-18	1	2
		3	2
		6	1
		7	5
		12	1
		15	1
		20	7
		22	1
		36	3
		45	1
	64-1	20	1
	64-7	6	3
		20	5
	64-10	15	1
		20	1
	64-11	20	1
	65-1	12	23
		13	10
		27	1
		35	2
		47	2
	65-2	12	3
		15	5
		25	2
	65-3	5	1
		7	4
		14	1
		20	1
		21	2
		2[illegible]	1
		27	1
		34	1
	65-4	13	1
		14	1
		30	1
		72	1

APPENDIX 1.(cont.)

	Cruise	Station	Number
Gammarus fasciatus			
	65-6	12	1
	65-6	13	1
		23	2
		53	2
	65-8	5	1
		6	2
		26	1
		28	2
		30	1
		33	1
		69	1
	65-10	7	6
		20	1
		22	1
	65-11	3	1
		6	1
		7	6
		12	2
		14	1
		24	1
		25	5
		28	1
	65-12	1	1
		2	10
		3	2
		4	1
		6	1
		7	6
Hexagenia	63-7	6	2
		14	2
		15	1
	65-1	13	1
		27	1
	65-2	7	2
		15	1
	65-4	14	3
	65-6	14	1
Trichoptera	63-16	3	1
	63-18	3	1
		20	2
	65-3	29	1
	65-8	47	1
		65	1
	65-10	74	1
	65-11	6	1
		14	1

APPENDIX 2. Benthic abundance (number sample-1) of the major invertebrate groups in Lake Erie, during the 1963-1965 GLI cruises. Cruise 6303 is cruise 03 of 1963. Sample size was 0.028 m^{-2}. STN - station number designation from that of cruise 6318; D(m) - depth in meters; OLIG - Oligochaeta; HIR - Hirudinea; PONT - Pontoporeia hoyi; ASEL - Asellus; CHIR - Chironomidae; PIS - Pisidium spp.; SPH - Sphaerium spp.; AMN - Amnicola spp; BYTH - Bythinia tentaculata; V.S - Valvata sincera; V.T - V. tricarinata; OTH - other taxa.

APPENDIX 3. Benthic biomass (vol. wet ml. sample $^{-1}$) of the major invertebrate groups in Lake Erie, during 1963-1965. Column headings as in appendix 2.

APPENDIX 2A. Benthic abundance (number sample^{-1}) of the major invertebrate groups in Lake Erie, during the 1963 GLI cruises. Cruise 6303 is cruise 03 of 1963.

CRUISE	STN	D(m)	OLIG	HIR	PONT	ASEL	CHIR	PIS	SPH	AMN	BYTH	V.S	V.T	OTH
6303	2	27	23	1	0	2	13	0	0	0	0	0	0	0
6303	3	16	9	0	0	0	6	0	1	0	0	1	0	0
6303	7	21	0	0	0	1	2	0	0	0	0	0	0	0
6303	8	19	0	0	0	0	0	0	0	0	0	0	0	0
6303	9	42	3	0	1	0	0	0	0	0	0	0	0	0
6303	10	37	1	0	0	0	0	0	0	0	0	0	0	0
6303	11	33	51	0	8	0	2	0	0	0	0	0	0	0
6303	12	18	2	0	0	0	3	0	0	0	0	0	0	0
6303	13	22	2	0	6	0	26	0	1	0	0	0	0	0
6303	14	15	0	0	0	0	6	0	1	0	0	0	0	0
6303	15	16	1	0	0	0	3	1	0	0	0	0	0	0
6303	16	25	1	1	0	0	7	0	0	0	0	0	0	0
6303	17	58	285	0	0	1	1	0	0	0	0	0	0	0
6303	18	50	0	0	0	0	0	0	0	0	0	0	0	0
6303	19	43	37	0	4	0	1	0	0	0	0	0	0	0
6303	20	20	8	1	5	0	0	0	0	0	0	2	0	0
6303	21	22	4	0	4	1	2	0	0	0	0	0	0	0
6303	22	17	3	1	0	0	1	10	4	0	0	1	0	0
6303	23	23	23	0	20	0	0	3	8	1	0	0	0	1
6303	25	15	3	0	1	0	0	0	0	0	0	0	0	0
6303	26	22	1	0	1	0	0	1	0	0	0	0	0	0
6303	27	22	0	0	0	0	3	0	0	0	0	0	0	0
6303	28	21	4	0	0	0	0	0	0	0	0	0	0	0
6303	29	24	2	0	0	0	0	0	0	0	0	0	0	0
6303	31	32	0	0	0	0	0	0	0	0	0	0	0	0
6303	32	30	28	0	0	0	6	0	1	1	0	0	0	0
6303	33	31	9	0	0	1	0	3	2	0	0	0	0	0
6303	34	32	30	0	0	0	13	0	0	0	0	0	0	0
6303	35	18	247	0	0	19	17	4	1	0	0	0	0	1
6303	36	14	26	0	0	1	6	0	0	0	0	0	0	0
6303	37	19	0	0	0	0	0	0	0	0	0	0	0	0
6303	38	16	4	0	0	0	0	0	0	0	0	0	0	0
6303	39	24	2	0	0	0	0	0	0	0	0	0	0	0
6303	40	26	14	0	0	0	0	0	0	0	0	0	0	0
6303	41	22	8	0	0	0	0	0	0	0	0	0	1	0
6303	42	22	0	0	0	0	0	0	0	0	0	0	0	0
6303	43	22	3	0	0	0	1	0	0	0	0	0	0	0
6303	44	14	55	0	0	0	0	0	0	0	0	1	0	0
6303	45	18	2	0	0	0	2	0	0	0	0	0	0	0
6303	46	14	0	0	0	0	0	0	0	0	0	0	0	0
6303	47	19	2	0	0	0	2	0	0	0	0	0	0	0
6303	48	25	4	0	0	0	0	0	0	0	0	0	0	0
6303	49	25	0	0	0	0	1	0	0	0	0	0	0	0
6303	49	31	0	0	0	0	1	0	0	1	0	0	0	0
6303	50	22	1	0	0	0	0	0	0	0	0	0	0	0
6303	51	23	0	0	0	0	0	0	0	0	0	0	0	0
6303	52	23	0	0	0	0	0	0	0	0	0	0	0	0
6303	53	11	39	0	0	0	0	0	0	0	0	0	0	0
6303	55	21	1	0	0	0	1	8	0	0	0	0	0	0
6303	56	21	11	0	0	0	2	0	0	0	0	0	0	0
6303	57	21	0	0	0	0	0	0	0	0	0	0	0	0
6303	58	24	2	0	0	0	0	0	0	0	0	0	0	0
6303	59	20	0	0	0	0	0	0	0	0	0	0	0	0
6303	60	24	8	0	0	0	3	0	0	0	0	0	0	0
6303	61	21	8	0	0	0	0	0	0	0	0	0	0	0
6303	62	19	11	0	0	0	3	0	0	0	0	0	0	0
6303	63	19	27	0	0	0	0	0	0	0	0	0	0	0
6303	64	16	11	0	0	0	0	0	0	0	0	0	0	0
6303	65	13	91	0	0	0	5	16	0	0	0	0	0	0
6303	66	14	7	0	0	1	5	11	0	0	0	3	2	0
6303	68	12	43	0	0	0	1	4	1	0	0	1	0	0
6303	69	18	0	0	0	0	0	0	0	0	0	0	0	0

APPENDIX 2A. (cont.)

CRUISE	STN	D(m)	OLIG	HIR	PONT	ASEL	CHIR	PIS	SPH	AMN	BYTH	V.S	V.T	OTH
6303	70	15	0	0	0	0	0	0	0	0	0	0	0	0
6303	71	10	0	0	0	0	5	0	0	0	0	0	0	0
6303	72	12	0	0	0	0	0	0	0	0	0	0	0	0
6303	73	11	0	0	0	0	0	0	0	0	0	0	0	0
6303	75	9	3	0	0	0	26	0	0	0	0	0	0	0
6303	76	8	12	0	0	0	1	0	0	0	0	0	0	2
6303	77	5	4	0	0	0	1	0	0	0	0	0	0	0
6303	78	7	1	0	0	0	0	0	1	0	0	0	0	0
6303	79	8	1	0	0	0	3	0	0	0	0	0	0	0
6303	80	9	0	0	0	0	1	0	0	0	0	0	0	0
6303	81	8	3	0	0	0	2	0	8	0	0	0	1	0
6303	82	9	8	0	0	0	2	7	12	3	0	0	1	0
6305	82	9	18	5	0	0	5	0	30	1	8	0	1	0
6305	81	9	1	0	0	0	1	0	0	0	0	0	0	0
6305	80	10	0	0	0	0	1	0	0	0	0	0	0	0
6305	79	12	9	0	0	0	5	0	1	0	0	0	0	1
6305	78	9	0	0	0	0	0	0	0	0	0	0	0	0
6305	76	11	1	0	0	0	0	0	0	0	0	0	0	0
6305	75	10	3	0	0	0	0	0	0	0	0	0	0	0
6305	74	19	3	0	0	0	0	0	0	0	0	0	0	0
6305	61	23	0	0	0	0	0	0	0	0	0	0	0	0
6305	57	19	3	0	0	0	1	0	0	0	0	0	0	0
6306	1	14	0	0	4	0	1	4	4	1	0	3	0	0
6306	11	35	6	0	5	0	2	0	0	0	0	0	0	0
6306	17	64	110	0	0	0	0	0	0	0	0	0	0	0
6306	18	48	1	0	0	0	0	0	0	0	0	0	0	0
6306	21	27	7	0	2	0	3	0	0	0	0	0	0	0
6306	22	12	10	0	0	0	1	2	1	0	0	2	0	0
6306	24	25	450	26	0	6	63	39	2	0	0	0	0	0
6306	25	16	2	0	30	0	2	4	0	1	0	6	0	0
6306	26	25	4	0	0	0	1	0	0	0	0	0	0	0
6306	27	29	15	0	0	0	7	3	0	0	0	0	0	0
6306	28	20	0	0	0	0	0	0	0	0	0	0	0	0
6306	29	21	1	0	0	0	0	0	0	0	0	0	0	0
6306	38	21	0	0	0	0	1	0	0	0	0	0	0	0
6306	39	25	0	0	0	0	0	0	1	0	0	0	0	0
6306	40	25	0	0	0	0	0	0	0	0	0	0	0	0
6306	41	23	8	0	1	0	1	1	0	0	0	0	0	0
6306	42	25	0	0	0	0	0	0	0	0	0	0	0	0
6306	44	24	0	1	0	0	0	0	0	0	0	0	0	0
6306	45	17	15	0	0	0	2	4	0	0	0	0	0	0
6306	51	26	1	0	0	0	0	0	0	0	0	0	0	0
6306	52	21	0	0	0	0	0	0	0	0	0	0	0	0
6306	53	12	0	0	0	0	0	0	0	0	0	0	0	0
6306	54	14	44	0	0	0	0	0	0	0	0	0	0	0
6306	55	13	13	0	0	0	0	5	0	0	0	1	0	0
6306	56	18	1	0	0	0	1	0	0	0	0	0	0	0
6306	57	20	0	0	0	0	0	0	0	0	0	0	0	0
6306	58	24	1	0	0	0	0	0	0	0	0	0	0	0
6306	59	25	0	0	0	0	0	0	0	0	0	0	0	0
6306	60	25	0	0	0	0	0	0	0	0	0	0	0	0
6306	61	24	15	0	0	0	0	0	0	0	0	0	0	0
6306	62	23	0	0	0	0	0	0	1	0	0	0	0	0
6307	82	8	7	0	0	0	0	0	0	0	1	0	0	0
6307	72	11	5	0	0	0	8	0	0	0	0	0	0	0
6307	71	12	1	0	0	0	0	0	0	0	0	0	0	0
6307	70	15	1	0	0	0	0	0	0	0	0	0	0	0
6307	69	13	0	0	0	0	5	0	2	0	0	1	0	0
6307	62	20	3	0	0	0	0	0	1	0	0	0	0	0
6307	61	22	4	0	0	0	0	0	0	0	0	0	0	0
6307	60	22	3	0	0	0	0	0	0	0	0	0	0	0
6307	59	22	1	0	0	0	0	0	0	0	0	0	0	0
6307	58	22	1	0	0	0	0	0	0	0	0	0	0	0
6307	57	20	0	0	0	0	0	0	0	0	0	0	0	0
6307	56	18	1	0	0	0	1	1	0	0	0	0	0	0

APPENDIX 2A. (cont.)

CRUISE	STN	D(m)	OLIG	HIR	PONT	ASEL	CHIR	PIS	SPH	AMN	BYTH	V.S	V.T	OTH
6307	51	21	4	0	0	0	0	0	0	0	0	0	0	0
6307	50	25	2	0	0	0	0	0	0	0	0	0	0	0
6307	49	24	2	0	0	0	0	0	0	0	0	0	0	0
6307	48	13	1	0	0	0	0	1	0	0	0	0	0	0
6307	47	18	14	0	0	0	2	3	0	0	0	0	0	0
6307	46	20	1	0	0	4	1	0	3	0	0	0	0	0
6307	40	24	0	0	0	0	0	0	1	0	0	1	0	0
6307	39	23	0	0	0	0	0	0	0	0	0	0	0	0
6307	38	18	0	0	0	0	0	0	0	0	0	0	0	0
6307	37	18	1	0	0	0	0	0	0	0	0	0	0	0
6307	36	16	19	0	0	0	1	0	1	0	2	0	0	0
6307	35	21	71	0	0	4	4	2	0	0	0	0	0	0
6307	28	18	10	4	0	0	5	0	0	0	0	0	0	1
6307	20	18	14	0	0	0	0	0	0	0	0	0	0	0
6307	19	37	1	0	0	0	0	0	0	0	0	0	0	0
6307	18	45	9	0	0	0	1	0	0	0	0	0	0	0
6307	17	56	130	0	0	0	0	0	0	0	0	0	0	0
6307	16	38	19	0	12	0	0	0	0	0	0	0	0	0
6307	15	18	1	0	0	0	0	0	0	0	0	0	0	0
6307	8	19	0	0	0	0	0	0	0	0	0	0	0	0
6307	7	20	0	0	0	0	3	0	1	0	0	0	0	0
6307	6	19	24	1	11	0	3	0	0	0	0	3	0	0
6307	5	23	7	0	0	0	5	2	0	0	0	0	0	0
6307	4	15	0	0	0	0	0	0	0	0	0	0	0	0
6307	3	17	27	0	0	0	6	0	0	0	0	0	0	0
6310	1	14	13	0	5	0	8	2	0	0	0	2	0	0
6310	2	25	3	1	0	0	0	3	0	0	0	0	0	0
6310	3	18	2	0	0	0	4	4	0	0	0	0	0	0
6310	4	12	2	1	0	0	5	5	1	1	0	0	0	0
6310	5	23	2	0	0	0	3	2	0	0	0	0	0	0
6310	6	16	5	0	2	0	10	11	0	0	2	1	0	0
6310	7	20	8	0	0	0	0	0	3	1	0	0	0	0
6310	8	24	10	0	3	0	1	2	0	0	0	0	0	0
6310	9	46	1	0	0	0	0	0	0	0	0	0	0	0
6310	10	34	4	0	5	0	0	0	0	0	0	0	0	0
6310	11	30	26	0	20	0	0	1	0	0	0	0	0	0
6310	12	19	0	0	0	0	1	0	0	0	0	0	0	0
6310	13	20	6	1	9	0	10	0	0	0	0	0	0	0
6310	14	13	0	0	3	0	5	0	0	0	0	0	0	0
6310	15	26	4	0	0	0	3	0	1	0	0	0	0	0
6310	16	38	76	0	21	0	1	0	0	0	0	0	0	0
6310	17	57	4	0	0	0	0	0	0	0	0	0	0	0
6310	18	45	6	0	5	0	1	0	0	0	0	0	0	0
6310	19	38	0	0	0	0	0	0	0	0	0	0	0	0
6310	20	20	119	0	32	0	2	12	2	0	0	0	0	0
6310	21	23	9	0	27	0	2	0	0	0	0	0	0	0
6310	22	9	1	0	0	0	4	0	0	0	0	0	0	0
6310	23	22	52	0	17	1	3	4	0	0	0	0	0	0
6310	24	17	31	0	4	0	12	0	0	0	0	0	0	0
6310	25	11	4	0	14	0	0	0	0	0	0	1	0	0
6310	26	20	0	0	0	0	0	0	0	0	0	0	0	0
6310	27	13	4	0	2	0	1	0	0	0	0	2	0	0
6310	28	18	14	1	0	6	0	1	0	0	0	0	0	0
6310	29	16	5	0	0	3	18	2	0	0	0	0	0	0
6310	30	18	6	0	0	3	2	0	0	0	0	0	0	0
6310	31	19	4	0	0	4	0	0	0	0	0	0	0	0
6310	32	21	6	0	0	0	0	0	0	0	0	0	0	0
6310	33	20	12	0	0	0	0	3	0	0	0	0	0	0
6310	34	22	2	0	0	0	0	0	0	0	0	0	0	0
6310	35	22	3	1	0	0	0	0	0	0	0	0	0	0
6310	36	16	13	1	0	0	0	0	0	0	0	0	0	0
6310	37	17	0	0	0	0	0	0	0	0	0	0	0	0
6310	38	18	1	0	0	0	0	0	0	0	0	0	0	0
6310	39	22	0	1	0	0	0	0	0	0	0	0	0	0
6310	40	22	0	0	0	0	0	0	0	0	0	0	0	0
6310	41	22	5	0	0	1	0	0	0	0	0	0	0	0
6310	42	22	2	0	0	0	0	0	0	0	0	0	0	0

APPENDIX 2A. (cont.)

CRUISE	STN	D(m)	OLIG	HIR	PONT	ASEL	CHIR	PIS	SPH	AMN	BYTH	V.S	V.T	OTH
6310	43	22	0	0	0	0	0	0	0	0	0	0	0	0
6310	44	20	2	0	0	0	0	0	0	0	0	0	0	0
6310	46	17	6	0	0	0	6	0	3	0	0	0	0	0
6310	47	17	1	0	0	0	19	0	0	0	0	0	0	0
6310	48	22	0	0	0	0	0	0	0	0	0	0	0	0
6310	49	23	48	0	0	0	0	6	0	0	0	0	0	0
6310	50	24	1	0	0	0	0	0	0	0	0	0	0	0
6310	51	23	2	0	0	0	0	0	0	0	0	0	0	0
6310	52	21	0	0	0	0	0	0	0	0	0	0	0	0
6310	53	12	2	1	0	0	0	0	0	0	0	0	0	0
6310	54	16	0	0	0	0	0	0	0	0	0	0	0	0
6310	55	16	2	0	0	0	0	0	0	0	0	1	0	0
6310	56	17	3	0	0	0	0	0	0	0	0	0	0	0
6310	57	22	0	0	0	0	0	0	0	0	0	0	0	0
6310	58	20	0	0	0	0	0	0	0	0	0	0	0	0
6310	59	21	1	0	0	0	0	0	0	0	0	0	0	0
6310	60	21	2	0	0	0	1	5	6	0	0	0	0	0
6310	61	21	12	0	0	0	2	0	0	0	0	0	0	0
6310	62	17	41	0	0	0	0	1	0	0	0	0	0	0
6310	63	15	119	0	0	11	1	2	0	0	0	0	0	0
6310	64	15	31	1	0	5	3	0	0	0	0	0	0	0
6310	65	14	79	0	0	2	7	1	0	0	0	0	1	0
6310	66	14	20	0	0	0	8	3	0	0	0	0	0	0
6310	67	14	8	0	0	0	0	0	0	0	0	0	0	0
6310	68	14	39	1	0	8	0	4	3	1	0	2	1	0
6310	69	13	0	0	0	8	2	1	0	0	0	0	0	0
6310	70	13	0	0	0	0	0	0	0	0	0	0	0	0
6310	71	12	2	0	0	0	0	0	0	0	0	0	0	0
6310	72	11	5	0	0	0	30	1	0	0	0	0	0	0
6310	73	10	1	0	0	0	0	0	0	0	0	0	0	0
6310	74	10	1	0	0	0	4	0	0	0	0	0	0	0
6310	75	10	1	0	0	0	2	0	0	0	0	0	0	0
6310	76	9	2	0	0	0	2	0	0	0	0	0	0	0
6310	78	9	4	0	0	0	9	0	0	0	0	0	0	0
6310	80	9	1	1	0	0	0	0	2	0	0	0	0	0
6310	81	9	3	0	0	0	0	0	10	1	0	0	0	0
6310	82	8	18	0	0	0	0	0	2	0	2	0	0	0
6313	1	17	0	0	0	0	0	4	2	0	0	0	0	0
6313	2	25	10	0	0	2	3	0	0	0	0	0	0	0
6313	3	18	1	0	0	0	1	3	0	3	0	1	1	1
6313	4	14	3	0	0	0	6	1	0	0	0	1	0	0
6313	5	23	7	0	0	1	15	2	1	0	0	0	0	0
6313	6	17	1	0	0	0	2	0	1	2	0	2	0	1
6313	7	17	1	4	0	1	5	3	5	0	0	2	0	0
6313	10	44	0	0	0	0	0	0	0	0	0	0	0	0
6313	11	21	52	0	7	0	0	0	0	0	0	0	0	0
6313	12	20	0	1	0	2	2	0	2	0	0	0	0	0
6313	13	19	2	0	3	0	0	0	0	0	0	0	0	0
6313	14	18	0	0	6	0	1	0	0	0	0	0	0	0
6313	15	19	0	0	0	1	0	0	0	0	0	0	0	0
6313	16	38	0	0	6	0	1	0	0	0	0	0	0	0
6313	17	57	59	0	7	0	1	0	0	0	0	0	0	0
6313	18	44	0	0	0	0	0	0	0	0	0	0	0	0
6313	19	38	22	0	7	0	0	0	0	0	0	0	0	0
6313	20	18	2	0	8	0	0	0	0	0	0	0	0	0
6313	21	25	12	0	65	5	0	4	0	0	0	0	0	0
6313	22	9	0	0	0	0	4	0	1	0	0	2	0	0
6313	23	21	153	0	7	0	2	2	0	0	0	0	0	0
6313	24	19	3	0	0	0	0	0	0	0	0	0	0	0
6313	25	18	4	0	10	0	0	3	2	2	0	0	0	0
6313	26	17	0	0	2	0	0	0	0	0	0	0	0	0
6313	27	14	16	0	0	0	4	0	0	0	0	0	0	0
6313	28	18	1	0	0	0	0	0	0	0	0	0	0	0
6313	29	14	0	1	0	10	4	0	0	0	0	0	0	0
6313	30	17	2	0	0	0	2	3	0	0	0	0	0	0
6313	31	20	7	0	0	0	0	0	0	0	0	0	0	0
6313	32	20	44	1	0	0	1	0	0	0	0	0	0	0

APPENDIX 2A. (cont.)

CRUISE	STN	D(m)	OLIG	HIR	PONT	ASEL	CHIR	PIS	SPH	AMN	BYTH	V.S	V.T	OTH
6313	33	21	23	0	0	5	0	0	0	0	0	0	0	0
6313	34	20	5	0	0	0	0	0	0	0	0	0	0	0
6313	35	22	1	0	0	0	0	0	0	0	0	0	0	0
6313	36	16	1	0	0	0	0	0	0	0	0	0	0	0
6313	37	18	0	0	0	0	0	0	0	0	0	0	0	0
6313	38	18	3	0	0	0	2	0	0	0	0	0	0	0
6313	39	22	0	0	0	0	0	0	0	0	0	0	0	0
6313	40	22	1	0	0	0	0	0	0	0	0	0	0	0
6313	41	22	2	0	0	0	1	0	0	0	0	0	0	0
6313	42	23	29	0	0	0	0	0	0	0	0	0	0	0
6313	43	22	0	0	0	0	0	0	0	0	0	0	0	0
6313	44	21	4	1	0	0	1	0	0	0	0	0	0	0
6313	45	16	11	1	0	7	3	4	1	0	0	0	0	0
6313	46	18	0	1	0	2	1	0	0	0	0	0	0	0
6313	47	17	7	1	0	0	3	0	0	0	0	0	0	0
6313	50	25	3	0	0	0	0	0	0	0	0	0	0	0
6313	51	24	5	0	0	0	0	0	0	0	0	0	0	0
6313	52	22	0	0	0	0	1	0	0	0	0	0	0	0
6313	53	12	0	1	0	0	0	0	0	0	0	0	0	0
6313	54	17	8	2	0	0	2	0	0	0	0	0	0	0
6313	55	16	55	0	0	0	11	0	0	1	0	0	0	0
6313	56	20	11	0	0	0	1	0	0	0	0	0	1	0
6313	57	21	0	0	0	0	4	0	0	0	0	0	0	0
6313	58	22	0	0	0	0	0	0	0	0	0	0	0	0
6313	59	22	0	0	0	0	2	0	0	0	0	0	0	0
6313	60	23	0	0	0	0	7	0	0	0	0	0	0	0
6313	61	23	0	0	0	0	0	0	0	0	0	0	0	0
6313	62	20	5	0	0	0	9	0	0	0	0	0	0	0
6313	63	27	8	0	0	0	3	3	0	0	0	0	0	0
6313	64	16	75	0	0	0	2	5	0	0	0	0	0	0
6313	65	13	134	3	0	1	10	43	0	0	0	1	0	0
6313	66	14	40	0	0	1	14	9	0	0	0	0	0	0
6313	67	13	15	0	0	0	13	1	0	0	0	0	0	0
6313	68	12	14	1	0	0	16	4	0	0	0	1	0	0
6313	69	13	1	0	0	0	19	2	0	0	0	2	0	0
6313	70	13	0	0	0	0	3	0	0	0	0	0	0	0
6313	71	12	1	0	0	0	7	0	0	0	0	0	0	0
6313	72	12	7	0	0	0	16	0	0	0	0	0	0	0
6313	76	10	0	0	0	0	3	0	0	0	0	0	0	0
6313	80	9	0	1	0	0	1	0	0	0	0	0	0	0
6313	81	9	0	0	0	0	0	0	0	0	0	0	0	0
6316	1	15	0	0	5	0	3	0	1	0	0	1	0	0
6316	2	24	2	0	1	1	9	1	0	0	0	0	0	0
6316	3	18	1	0	2	0	3	0	0	0	0	2	0	1
6316	4	14	2	0	2	0	5	1	0	0	0	0	0	0
6316	5	22	7	0	0	0	4	0	0	0	0	0	0	0
6316	6	16	2	1	0	0	11	1	2	0	7	0	0	0
6316	7	17	0	2	3	1	2	0	3	0	3	1	0	2
6316	8	19	0	0	0	0	0	0	0	0	0	0	0	0
6316	9	43	0	0	0	0	0	0	0	0	0	0	0	0
6316	11	30	23	0	16	0	0	0	0	0	0	0	0	0
6316	12	14	0	0	0	0	3	0	0	0	0	0	0	0
6316	13	18	0	0	0	1	1	0	0	0	1	1	0	1
6316	14	20	8	0	0	0	1	0	0	0	0	0	0	0
6316	15	18	0	0	0	0	0	0	0	0	0	0	0	0
6316	16	38	18	0	17	0	0	0	0	0	0	0	0	0
6316	17	54	53	0	1	0	1	0	0	0	0	0	0	0
6316	18	44	1	0	0	0	0	0	0	0	0	0	0	0
6316	19	35	39	0	27	0	0	0	0	0	0	0	0	0
6316	20	16	1	0	0	0	0	2	0	0	0	1	1	0
6316	21	24	1	0	5	0	1	0	0	0	0	0	0	0
6316	22	9	0	0	0	0	3	0	0	0	0	5	0	3
6316	23	22	21	3	1	0	0	0	0	0	0	0	0	0
6316	24	20	0	0	0	0	0	0	0	0	0	0	0	0
6316	25	14	0	0	17	0	0	16	5	8	0	10	0	0
6316	26	15	0	0	9	0	1	1	0	1	0	1	0	0
6316	27	16	0	0	0	0	0	0	0	0	0	0	0	0

APPENDIX 2A. (cont.)

CRUISE	STN	D(m)	OLIG	HIR	PONT	ASEL	CHIR	PIS	SPH	AMN	BYTH	V.S	V.T	OTH
6316	28	17	0	1	0	0	0	0	0	0	0	0	0	0
6316	29	16	2	3	0	0	0	0	0	0	0	0	0	1
6316	30	18	1	0	0	11	0	1	0	0	0	0	0	10
6316	31	18	0	0	0	0	0	0	0	0	0	0	0	0
6316	32	20	40	0	0	1	1	0	0	1	0	0	0	0
6316	33	20	29	1	0	4	2	0	1	0	0	2	0	0
6316	34	22	22	0	0	1	1	4	1	0	0	3	0	0
6316	35	22	15	0	0	0	2	0	0	0	0	0	0	0
6316	36	16	3	0	0	0	2	0	0	0	0	0	0	0
6316	37	18	0	0	0	0	0	1	0	0	0	0	0	0
6316	38	18	2	0	0	0	0	0	0	0	0	1	0	0
6316	39	22	0	0	0	0	0	0	0	0	0	0	0	0
6316	40	23	4	0	0	0	1	0	0	0	0	0	0	0
6316	41	22	2	0	0	0	0	0	0	0	0	0	0	0
6316	42	22	1	0	0	0	1	0	1	0	0	0	0	0
6316	44	20	0	0	0	0	0	0	0	0	0	0	0	0
6316	45	13	3	0	0	2	1	6	2	0	0	0	0	0
6316	46	18	0	0	0	0	0	0	0	0	0	0	0	0
6316	47	18	8	0	0	0	10	0	0	0	0	0	0	0
6316	48	23	4	0	0	0	4	0	0	0	0	0	0	0
6316	49	23	6	0	0	0	0	0	0	0	0	0	0	0
6316	50	25	0	0	0	0	0	0	0	0	0	0	0	0
6316	52	21	1	0	0	0	0	0	0	0	0	0	0	0
6316	53	14	3	0	0	0	9	1	0	0	0	0	0	0
6316	54	15	4	0	0	0	0	0	0	0	0	0	0	0
6316	55	16	70	0	0	1	27	3	0	1	0	0	0	0
6316	56	18	1	0	0	0	0	0	0	0	0	0	0	0
6316	57	22	1	0	0	0	1	0	0	0	0	0	0	0
6316	58	22	1	0	0	0	2	0	0	0	0	0	0	0
6316	59	22	1	0	0	0	2	0	0	0	0	0	0	0
6316	60	21	7	0	0	0	2	0	0	0	0	0	0	0
6316	61	21	1	0	0	0	0	0	0	0	0	0	0	0
6316	62	20	6	0	0	0	3	2	0	0	0	0	0	0
6316	63	18	58	0	0	0	11	19	0	0	0	0	0	0
6316	64	16	158	0	0	0	28	22	0	0	0	0	0	0
6316	65	14	25	0	0	0	9	1	0	0	0	0	0	0
6316	66	13	4	0	0	0	6	1	0	0	0	0	0	0
6316	67	16	45	0	0	0	17	7	0	0	0	3	1	0
6316	68	12	13	1	0	0	21	0	1	1	0	1	0	0
6316	69	11	54	0	0	0	5	0	0	0	0	0	0	0
6316	70	14	0	0	0	0	1	0	0	0	0	0	0	0
6316	71	14	0	0	0	0	1	0	0	0	0	0	0	0
6316	72	12	5	0	0	0	10	0	0	0	0	0	0	0
6316	73	11	1	0	0	0	2	0	0	0	0	0	0	0
6316	74	11	12	0	0	0	12	0	0	0	0	0	0	1
6316	75	10	0	0	0	0	4	0	0	0	0	0	0	0
6316	76	10	0	0	0	0	0	0	0	0	0	0	0	0
6316	78	10	0	0	0	0	14	0	0	0	0	0	0	0
6316	80	9	0	1	0	0	0	0	1	0	0	0	0	0
6316	81	9	2	0	0	0	5	0	8	0	0	0	1	0
6316	82	8	8	2	0	0	0	1	1	0	4	0	1	0
6318	1	16	0	0	2	0	2	0	2	1	0	2	0	0
6318	2	24	7	2	0	1	4	1	0	0	0	0	0	0
6318	3	18	13	6	0	0	14	8	0	2	4	3	2	3
6318	4	15	0	1	0	0	0	0	0	0	0	0	0	0
6318	5	22	2	0	0	0	2	0	0	0	0	0	0	0
6318	6	18	3	2	0	1	4	0	2	0	1	0	0	2
6318	7	19	0	0	0	0	3	0	0	0	0	1	0	5
6318	9	42	8	0	2	0	0	0	0	0	0	0	0	0
6318	10	41	1	0	0	0	0	0	0	0	0	0	0	0
6318	11	31	51	0	45	0	0	0	1	0	0	0	0	0
6318	12	20	1	1	0	2	0	2	1	0	2	2	1	1
6318	13	20	0	1	1	0	3	0	0	0	0	0	0	0
6318	14	19	1	0	5	0	2	0	0	0	0	0	0	0
6318	15	19	1	2	2	0	0	0	0	0	0	0	0	1
6318	16	36	103	0	67	0	0	0	0	0	0	0	0	0
6318	17	56	25	0	7	0	0	0	0	0	0	0	0	0

APPENDIX 2A. (cont.)

CRUISE	STN	D(m)	OLIG	HIR	PONT	ASEL	CHIR	PIS	SPH	AMN	BYTH	V.S	V.T	OTH
6318	18	44	0	0	0	0	0	0	0	0	0	0	0	0
6318	19	37	42	0	25	0	0	0	0	0	0	0	0	0
6318	20	19	11	0	4	0	6	2	1	0	0	4	0	9
6318	21	26	3	0	10	0	1	0	0	0	0	1	0	0
6318	22	10	0	0	0	0	2	0	0	0	0	0	0	2
6318	23	23	350	3	0	4	39	25	0	0	0	0	0	2
6318	24	17	31	2	0	0	1	0	0	0	0	0	0	3
6318	25	14	1	0	9	0	0	2	0	0	0	0	0	1
6318	26	19	14	0	5	0	4	1	0	0	0	0	0	3
6318	27	16	16	0	0	0	0	0	2	0	0	0	0	0
6318	28	16	3	4	2	2	4	0	0	3	0	1	0	0
6318	29	15	12	0	0	0	4	0	0	0	0	0	0	0
6318	30	18	13	1	0	0	2	1	1	0	0	0	0	0
6318	31	20	0	0	0	0	0	0	0	0	0	0	0	0
6318	32	21	6	0	0	2	8	2	0	0	0	0	0	0
6318	33	22	33	0	0	1	5	0	2	0	0	0	0	0
6318	34	21	80	1	0	3	6	0	0	0	0	0	0	0
6318	35	22	51	0	0	1	4	0	0	0	0	0	0	0
6318	36	16	16	0	0	2	11	0	0	0	3	2	0	3
6318	37	18	0	0	0	0	0	0	0	0	0	0	0	0
6318	38	18	0	0	0	0	0	0	0	0	0	0	0	0
6318	39	22	0	0	0	0	5	0	0	0	0	0	0	0
6318	40	22	0	0	0	0	0	0	2	0	0	0	0	0
6318	41	23	19	0	0	0	1	0	0	0	0	0	0	0
6318	42	22	0	0	0	0	0	0	0	0	0	0	0	0
6318	43	22	3	0	0	0	0	0	0	0	0	0	0	0
6318	44	20	1	0	0	0	8	0	0	0	0	0	0	0
6318	45	10	5	2	0	7	63	0	1	0	0	0	0	5
6318	46	15	12	0	0	3	19	0	0	1	0	0	0	0
6318	47	18	17	1	0	0	13	0	0	0	0	0	0	0
6318	48	22	0	0	0	0	4	0	0	0	0	0	0	0
6318	49	24	1	0	0	0	1	0	0	0	0	0	0	0
6318	50	24	0	0	0	0	0	0	0	0	0	0	0	0
6318	51	22	0	0	0	0	0	0	0	0	0	0	0	0
6318	52	20	3	0	0	0	0	0	0	0	0	0	0	0
6318	53	12	18	0	0	0	3	0	0	0	0	0	0	0
6318	54	15	13	2	0	0	1	1	0	0	0	0	0	0
6318	55	16	6	0	0	0	32	0	0	0	0	0	0	0
6318	56	18	1	0	0	0	0	0	0	0	0	0	0	0
6318	57	20	2	0	0	0	2	0	0	0	0	0	0	0
6318	58	21	1	0	0	0	3	0	0	0	0	0	0	0
6318	59	22	0	0	0	0	0	0	0	0	0	0	0	0
6318	60	21	6	0	0	0	4	1	0	0	0	0	0	0
6318	61	21	8	0	0	0	3	0	0	0	0	0	0	0
6318	62	17	160	0	0	0	25	15	0	0	0	0	0	1
6318	63	15	200	0	0	1	33	24	0	0	0	0	0	0
6318	64	15	95	0	0	6	26	4	0	2	0	0	0	0
6318	65	13	111	1	0	1	16	20	0	0	0	2	5	0
6318	66	13	16	0	0	1	9	7	0	0	0	0	3	0
6318	67	14	12	0	0	0	7	0	0	0	0	0	1	0
6318	68	14	52	2	0	3	28	6	0	1	1	0	1	2
6318	69	11	0	1	0	0	0	0	0	0	0	0	0	0
6318	70	15	1	2	0	0	0	0	0	0	0	0	0	0
6318	71	15	5	1	0	0	2	0	0	0	0	0	0	0
6318	72	13	4	0	0	0	15	0	0	0	0	0	0	0
6318	73	10	0	0	0	0	1	0	0	0	0	0	0	0
6318	74	10	6	1	0	0	5	0	0	0	0	0	0	0
6318	75	10	0	0	0	0	6	0	0	0	0	0	0	0
6318	76	10	4	0	0	0	2	0	0	0	0	0	0	0
6318	77	7	28	0	0	0	29	4	0	0	0	0	0	0
6318	78	9	7	0	0	0	4	0	0	0	0	0	0	0
6318	79	8	0	0	0	0	3	0	0	0	0	0	0	0
6318	80	9	1	0	0	0	2	0	1	0	0	0	0	0
6318	81	8	12	0	0	0	2	0	30	5	13	0	1	0
6318	82	8	0	0	0	0	0	0	1	0	0	0	0	0

APPENDIX 2B. Benthic abundance (number sample^{-1}) of the major invertebrate groups in Lake Erie, during the GLI cruises of 1964.

CRUISE	STN	D(m)	OLIG	HIR	PONT	ASEL	CHIR	PIS	SPH	AMN	BYTH	V.S	V.T	OTH
6401	15	18	3	1	1	0	2	0	0	0	0	0	0	1
6401	16	39	16	0	77	0	1	0	0	0	0	0	0	0
6401	17	58	108	0	14	0	1	0	0	0	0	0	0	0
6401	18	40	10	0	1	0	0	0	0	0	0	0	0	0
6401	19	37	19	0	54	0	0	0	0	0	0	0	0	0
6401	20	16	1	0	3	0	1	1	0	0	0	0	0	0
6401	55	16	16	0	0	0	7	5	0	0	0	0	0	0
6401	56	19	11	0	0	0	4	0	0	0	0	0	0	0
6401	57	18	10	0	0	0	0	1	0	0	0	0	0	0
6401	58	22	3	0	0	0	1	0	0	0	0	0	0	0
6401	59	19	0	0	0	0	0	0	0	0	0	0	0	0
6401	60	22	7	0	0	0	4	0	2	0	0	0	0	0
6401	61	21	1	0	0	0	0	0	0	0	0	0	0	0
6401	62	21	12	0	0	0	18	15	0	0	0	0	0	0
6401	78	8	0	0	0	0	8	0	0	0	0	0	0	0
6401	81	9	5	0	0	0	1	1	9	0	4	0	0	0
6401	83	9	0	0	0	0	1	0	0	0	0	0	0	0
6404	15	19	1	0	0	0	0	0	0	0	0	0	0	0
6404	16	39	45	0	20	0	0	0	0	0	0	0	0	0
6404	17	57	300	0	0	0	0	0	0	0	0	0	0	0
6404	18	45	6	0	3	0	0	0	0	0	0	0	0	0
6404	19	40	8	0	0	0	0	0	0	0	0	0	0	0
6404	20	18	18	0	2	0	0	0	0	0	0	0	0	0
6404	55	17	108	0	0	0	0	7	0	0	0	0	0	1
6404	56	19	1	0	0	0	0	0	0	0	0	0	0	0
6404	57	20	6	0	0	0	0	0	0	0	0	0	0	0
6404	58	21	0	0	0	0	0	0	0	0	0	0	0	0
6404	59	22	0	0	0	0	0	0	0	0	0	0	0	0
6404	60	21	5	0	0	0	0	0	0	0	0	0	0	0
6404	61	21	1	0	0	0	0	0	0	0	0	0	0	0
6404	62	20	0	0	0	0	0	0	0	0	0	0	0	0
6404	78	9	0	0	0	0	0	0	0	0	0	0	0	0
6404	81	8	9	1	0	0	0	0	1	0	0	0	0	0
6404	83	5	55	2	0	0	0	0	1	0	0	0	0	0
6406	15	20	3	0	1	0	4	0	0	0	0	0	0	0
6406	16	39	200	0	33	0	0	0	0	0	0	0	0	0
6406	17	56	350	0	9	0	0	0	0	0	0	0	0	0
6406	18	45	11	0	1	0	0	0	0	0	0	0	0	0
6406	19	49	49	0	24	0	0	0	0	0	0	0	0	0
6406	20	23	16	0	0	0	1	3	0	0	0	0	0	0
6406	55	16	10	0	0	0	0	0	0	0	0	0	0	0
6406	56	19	2	0	0	0	0	0	0	0	0	0	0	0
6406	57	21	2	0	0	0	0	0	0	0	0	0	0	0
6406	58	22	2	0	0	0	0	2	0	0	0	0	0	0
6406	59	22	1	0	0	0	1	0	0	0	0	0	0	0
6406	60	22	6	0	0	0	0	0	1	0	0	0	0	0
6406	61	23	2	0	0	0	0	0	0	0	0	0	0	0
6406	62	20	4	0	0	0	3	16	0	0	0	0	0	0
6406	78	9	0	0	0	0	0	0	0	0	0	0	0	0
6406	81	9	44	0	0	0	2	0	1	0	1	0	1	1
6406	83	6	275	3	0	0	0	0	62	0	0	0	0	0

APPENDIX 2B. (cont.)

CRUISE	STN	D(m)	OLIG	HIR	PONT	ASEL	CHIR	PIS	SPH	AMN	BYTH	V.S	V.T	OTH
6407	83	5	54	3	0	0	0	0	44	0	0	0	0	0
6407	80	7	2	0	0	0	1	0	0	0	0	0	0	0
6407	78	8	0	0	0	0	0	0	0	0	0	0	0	0
6407	61	20	18	0	0	0	0	2	0	0	0	0	0	0
6407	60	21	2	0	0	0	3	0	0	0	0	0	0	0
6407	59	21	0	0	0	0	0	0	0	0	0	0	0	0
6407	58	21	2	0	0	0	0	0	0	0	0	0	0	0
6407	56	18	1	0	0	0	0	0	0	0	0	0	0	0
6407	55	15	6	0	0	0	0	2	0	0	0	0	0	0
6407	54	14	8	0	0	1	0	1	0	0	0	0	1	0
6407	20	17	8	1	24	0	55	16	0	0	0	0	0	1
6407	19	38	54	0	12	0	0	0	0	0	0	0	0	0
6407	18	46	5	0	1	0	0	0	0	0	0	0	0	0
6407	17	53	355	0	2	0	0	0	0	0	0	0	0	11
6407	16	34	105	0	11	0	0	0	0	0	0	0	0	5
6407	15	16	2	1	0	0	0	0	0	0	0	0	0	0
6407	6	16	2	2	0	0	0	1	0	0	1	1	0	0
6407	2	22	7	0	0	1	7	5	0	0	0	0	0	0
6407	1	14	18	0	3	0	16	2	2	0	0	0	0	0
6409	83	6	51	3	0	0	1	0	53	0	1	0	0	0
6409	81	9	7	1	0	0	0	0	15	0	0	0	0	0
6409	78	9	34	3	0	0	0	0	0	0	0	0	0	0
6410	15	20	6	2	5	0	2	0	0	1	0	0	0	0
6410	16	40	110	0	39	0	0	0	0	0	0	0	0	0
6410	17	60	92	0	0	0	0	0	0	0	0	0	0	6
6410	18	47	17	0	2	0	0	0	0	0	0	0	0	1
6410	19	40	46	0	22	0	0	0	0	0	0	0	0	3
6410	20	20	60	6	0	5	2	11	1	0	0	0	0	0
6410	55	15	10	0	0	0	4	3	0	0	0	0	0	0
6410	56	19	13	0	0	0	0	0	0	0	0	0	0	0
6410	57	22	2	0	0	0	1	0	0	0	0	0	0	0
6410	58	21	4	0	0	0	1	0	0	0	0	0	0	0
6410	59	22	1	0	0	0	0	0	0	0	0	0	0	0
6410	60	22	0	0	0	0	1	0	0	0	0	0	0	0
6410	61	21	1	0	0	0	0	0	0	0	0	0	0	0
6410	62	20	16	0	0	0	1	1	0	0	0	0	0	0
6410	78	9	6	0	0	0	4	0	0	0	0	0	0	0
6410	81	8	10	2	0	0	0	2	0	0	1	0	1	0
6410	83	6	21	3	0	0	1	0	0	1	2	0	0	0
6411	53	12	1	0	0	0	0	0	0	0	0	0	0	0
6411	52	22	0	0	0	0	0	1	0	0	0	0	0	0
6411	51	25	2	0	0	0	2	0	0	0	0	0	0	0
6411	50	25	7	0	0	0	4	0	0	0	0	0	0	0
6411	49	25	25	0	0	0	4	0	0	0	0	0	0	3
6411	48	23	12	0	0	0	15	0	0	0	0	1	0	0
6411	47	18	32	1	0	0	27	0	0	0	0	1	0	0
6411	20	19	126	23	0	3	9	2	0	0	0	0	0	0
6411	19	39	50	0	8	0	1	0	0	0	0	0	0	0
6411	18	47	12	1	2	0	0	0	0	0	0	0	0	0
6411	17	59	369	0	16	0	0	0	0	0	0	0	0	1
6411	16	40	651	0	2	0	0	0	0	0	0	0	0	4
6411	15	21	11	0	14	0	4	0	0	0	0	0	0	0

APPENDIX 2C. Benthic abundance (number sample-1) of the major invertebrate groups in Lake Erie, during the GLI cruises of 1965.

CRUISE	STN	D(m)	OLIG	HIR	PONT	ASEL	CHIR	PIS	SPH	AMN	BYTH	V.S	V.T	OTH
6501	2	22	15	1	0	0	20	1	1	0	0	0	1	0
6501	10	32	400	0	3	0	0	0	0	0	0	0	0	0
6501	11	33	200	1	18	0	0	0	0	0	0	0	0	0
6501	12	21	0	0	0	22	4	1	0	0	0	0	0	23
6501	13	18	1	1	0	0	8	1	0	0	0	0	0	11
6501	17	55	237	0	13	0	0	0	0	0	0	0	0	0
6501	18	48	51	0	31	0	0	0	0	0	0	0	0	0
6501	21	26	10	0	16	1	3	1	0	0	0	0	0	0
6501	23	23	100	1	12	0	5	14	1	0	0	0	0	0
6501	24	19	5	0	0	0	1	0	0	0	0	0	0	0
6501	25	14	3	0	92	0	0	4	1	3	0	3	0	1
6501	26	15	9	0	13	0	1	28	2	2	0	3	0	2
6501	27	14	48	0	19	0	381	4	3	5	0	2	0	34
6501	28	17	1	0	0	0	0	0	0	0	0	0	0	0
6501	29	15	1	0	0	0	4	0	0	0	0	0	0	0
6501	30	18	15	0	0	0	2	0	0	0	0	0	0	0
6501	31	20	27	3	0	0	5	1	0	0	0	0	0	2
6501	32	21	116	2	0	6	10	2	0	0	0	0	0	1
6501	33	20	1	0	0	0	0	0	0	0	0	0	0	0
6501	34	21	16	0	0	1	1	0	0	0	0	0	0	0
6501	35	21	73	0	0	3	5	0	1	0	0	0	0	2
6501	36	17	43	0	0	3	22	0	1	4	4	2	0	0
6501	37	18	1	2	0	0	0	0	0	0	0	0	0	0
6501	38	18	5	0	0	0	1	0	0	0	0	0	0	0
6501	39	21	1	0	0	0	2	0	0	0	0	0	0	0
6501	40	21	24	0	0	0	14	0	9	0	0	0	0	0
6501	41	22	17	0	0	0	2	0	1	0	0	0	0	0
6501	42	22	10	0	0	0	3	0	0	0	0	0	0	3
6501	43	21	3	0	0	0	0	0	0	0	0	0	0	0
6501	44	20	0	0	0	0	0	0	0	0	0	0	0	0
6501	45	14	48	0	0	0	88	55	1	3	0	0	0	0
6501	46	16	1	0	0	3	4	0	0	1	0	0	0	1
6501	47	15	150	5	0	0	132	8	0	0	0	0	0	5
6501	48	22	7	0	0	0	4	0	0	0	0	0	0	0
6501	49	24	10	0	0	0	4	0	0	0	0	0	0	0
6501	50	23	0	0	0	0	3	1	0	0	0	0	0	0
6501	51	23	5	0	0	0	10	0	0	0	0	0	0	0
6501	52	20	21	1	0	0	3	0	0	0	0	0	0	0
6501	53	10	4	0	0	0	0	0	0	0	0	0	0	0
6501	54	14	1	0	0	0	0	0	0	0	0	0	0	0
6501	55	15	13	0	0	0	5	2	0	0	0	0	0	2
6501	56	18	10	0	0	0	4	0	0	0	0	0	0	0
6501	57	20	3	0	0	0	7	0	0	0	0	0	0	0
6501	58	21	3	0	0	0	1	0	1	0	0	0	0	0
6501	59	21	0	0	0	0	2	1	1	0	0	0	0	0
6501	60	21	3	0	0	0	4	0	0	0	0	0	0	0
6501	61	20	2	0	0	0	0	0	1	0	0	0	0	0
6501	62	19	7	0	0	0	2	0	0	0	0	0	0	0
6501	63	17	21	0	0	0	10	7	0	0	0	0	0	2
6501	64	15	16	0	0	0	8	0	0	0	0	0	0	0
6501	65	12	67	0	0	3	5	27	0	1	0	3	6	1
6501	66	12	94	4	0	1	25	3	0	0	0	1	1	1
6501	67	12	0	0	0	0	0	0	0	0	0	0	0	0
6501	68	10	15	1	0	0	2	6	0	2	0	5	0	0
6501	69	12	0	0	0	0	0	0	0	0	0	0	0	0
6501	70	12	25	0	0	0	9	0	0	0	0	0	0	0
6501	71	12	6	0	0	0	2	0	0	0	0	0	0	0
6501	72	10	21	4	0	0	22	0	0	0	0	0	1	6
6501	73	9	3	0	0	0	1	0	0	0	0	0	0	0
6501	74	9	2	0	0	0	2	0	0	0	0	0	0	0
6501	75	8	4	0	0	0	1	0	0	0	0	0	0	0
6501	76	8	1	0	0	0	0	0	0	0	0	0	0	0
6501	78	8	2	0	0	0	2	0	0	0	0	0	0	0
6501	80	8	0	0	0	0	1	0	0	0	0	0	0	0
6501	81	8	7	0	0	0	0	3	1	0	0	0	0	0
6501	83	5	23	2	0	0	0	7	0	0	1	0	0	0
6501	82	6	36	5	0	0	3	22	5	0	2	0	0	1

APPENDIX 2C.(cont.)

CRUISE	STN	D(m)	OLIG	HIR	PONT	ASEL	CHIR	PIS	SPH	AMN	BYTH	V.S	V.T	OTH
6502	72	13	11	0	0	0	11	0	0	0	0	0	0	0
6502	71	12	1	0	0	0	0	0	0	0	0	0	0	0
6502	70	14	37	1	0	0	4	0	0	0	0	0	0	1
6502	69	12	2	1	0	0	0	0	0	0	0	0	0	0
6502	68	12	28	4	0	0	8	7	0	1	2	2	2	3
6502	67	14	114	11	0	0	31	23	0	0	0	0	0	0
6502	66	13	9	1	0	0	3	1	2	0	6	2	0	0
6502	65	13	58	0	0	2	10	16	0	1	0	0	1	2
6502	64	15	42	0	0	0	5	14	0	0	0	0	0	0
6502	63	17	18	0	0	0	6	9	0	0	0	0	0	0
6502	62	21	9	0	0	0	1	0	0	0	0	0	0	0
6502	61	22	95	5	0	0	12	28	0	0	0	1	0	12
6502	58	21	2	0	0	0	1	0	0	0	0	0	0	0
6502	57	22	0	0	0	0	0	0	0	0	0	0	0	0
6502	56	19	3	0	0	0	1	0	0	0	0	0	0	0
6502	55	14	40	0	0	0	1	0	0	0	0	0	0	0
6502	54	14	4	0	0	0	0	0	0	0	0	0	0	0
6502	53	13	0	0	0	0	0	0	0	0	0	0	0	0
6502	52	21	0	0	0	0	0	1	0	0	0	0	0	0
6502	51	24	2	0	0	0	1	0	0	0	0	0	0	0
6502	50	25	1	0	0	0	1	0	0	0	0	0	0	0
6502	49	24	5	0	0	0	4	0	0	0	0	0	0	2
6502	48	23	24	1	0	1	4	1	1	0	0	1	0	0
6502	47	17	120	13	0	0	37	19	6	0	0	1	0	1
6502	46	17	12	0	0	0	1	0	0	0	0	0	0	0
6502	45	16	0	0	0	0	0	0	0	0	0	0	0	0
6502	44	20	4	0	0	0	10	0	0	0	0	0	0	0
6502	43	23	0	0	0	0	3	0	0	0	0	0	0	0
6502	42	23	2	0	0	0	1	1	0	0	0	0	0	0
6502	41	23	0	0	0	0	1	0	0	0	0	0	0	0
6502	40	23	5	2	0	1	4	0	0	0	0	0	0	0
6502	39	21	6	0	0	1	5	6	0	0	0	0	0	0
6502	38	18	3	0	0	0	2	0	0	0	0	0	0	0
6502	37	18	0	0	0	0	0	0	0	0	0	0	0	0
6502	36	16	0	0	0	0	0	0	0	0	0	1	0	0
6502	35	23	1	0	0	0	1	0	0	0	0	0	0	0
6502	34	22	112	5	0	1	16	0	2	0	0	0	0	0
6502	33	21	28	1	0	3	5	3	5	0	0	2	0	7
6502	32	20	38	2	0	1	6	3	0	2	0	0	0	1
6502	31	20	4	0	0	0	5	0	0	0	0	0	0	0
6502	30	20	0	0	0	0	0	0	0	0	0	0	0	0
6502	29	17	0	0	0	0	0	0	0	0	0	0	0	0
6502	27	16	2	0	0	0	2	0	0	0	0	0	0	0
6502	26	16	1	0	12	0	1	11	2	3	0	0	0	0
6502	25	16	2	0	1	0	0	6	2	1	0	0	0	2
6502	24	19	0	0	0	0	1	0	0	0	0	0	0	0
6502	23	23	218	1	4	26	25	76	1	0	0	0	0	13
6502	22	9	0	0	0	0	0	0	0	0	0	0	0	0
6502	21	27	37	0	13	0	4	1	0	0	0	0	0	0
6502	20	17	0	0	0	0	0	0	0	0	0	0	0	0
6502	19	38	31	0	8	0	1	0	0	0	0	0	0	0
6502	18	44	80	0	76	0	1	0	0	0	0	0	0	2
6502	17	56	130	0	19	0	0	0	0	0	0	0	0	1
6502	16	38	80	0	33	0	0	0	0	0	0	0	0	0
6502	15	19	9	2	0	1	21	0	5	0	0	0	0	7
6502	12	20	7	3	0	6	16	4	0	0	0	0	0	4
6502	11	31	24	0	6	0	2	0	0	0	0	0	0	0
6502	10	45	4	0	3	0	0	0	0	0	0	0	0	1
6502	9	43	3	0	1	0	1	2	0	0	0	0	0	0
6502	8	23	0	0	0	0	0	0	0	0	0	0	0	0
6502	7	19	18	3	0	0	23	1	0	0	6	1	1	6
6502	6	18	100	6	0	3	8	5	0	0	0	0	1	2
6502	5	24	22	0	0	0	8	1	0	0	0	0	0	0
6502	4	15	3	0	0	0	0	0	0	0	0	0	0	0
6502	3	18	18	0	0	0	5	3	2	0	0	1	1	19
6502	2	24	25	1	0	0	23	8	0	0	0	1	0	0

APPENDIX 2C.(cont.)

CRUISE	STN	D(m)	OLIG	HIR	PONT	ASEL	CHIR	PIS	SPH	AMN	BYTH	V.S	V.T	OTH
6503	1	12	6	0	9	0	1	2	0	0	0	0	0	0
6503	2	26	48	0	0	0	16	7	0	0	0	0	0	4
6503	3	18	27	0	0	0	41	1	1	0	0	0	0	3
6503	4	15	2	0	0	0	1	1	0	0	0	0	0	0
6503	5	23	15	2	0	0	4	2	0	0	0	0	0	2
6503	6	18	0	1	0	0	0	0	1	0	0	0	0	0
6503	7	20	5	0	0	0	5	0	0	0	0	1	0	8
6503	9	44	0	0	0	0	1	0	0	0	0	0	0	0
6503	10	44	0	0	1	0	0	0	0	0	0	0	0	0
6503	11	33	45	0	3	0	0	0	0	0	0	0	0	0
6503	12	22	39	1	0	0	5	2	0	0	0	0	0	0
6503	14	19	1	0	9	0	14	0	0	0	0	0	0	1
6503	15	19	6	0	0	0	10	0	0	0	0	0	0	0
6503	16	36	15	0	24	0	0	0	0	0	0	0	0	0
6503	17	57	89	0	4	0	0	0	0	0	0	0	0	0
6503	18	44	6	0	0	0	0	0	0	0	0	0	0	0
6503	19	38	5	0	0	0	0	0	0	0	0	0	0	0
6503	20	19	53	18	0	6	76	1	3	0	0	0	0	9
6503	21	26	22	0	15	2	5	1	0	0	0	0	0	4
6503	22	9	2	0	0	0	1	4	4	0	0	0	0	0
6503	23	23	132	0	24	2	19	2	1	0	0	0	0	0
6503	24	17	0	0	0	0	0	0	0	0	0	0	0	0
6503	25	19	0	0	0	0	0	0	0	0	0	0	0	0
6503	26	19	4	0	1	0	1	0	0	0	0	0	0	1
6503	27	17	0	0	0	0	1	0	0	0	0	0	0	1
6503	28	18	8	0	0	0	0	0	0	0	0	0	0	1
6503	29	15	1	0	0	0	0	0	0	0	0	0	0	1
6503	30	18	8	0	0	0	2	0	0	0	0	0	0	1
6503	31	20	5	0	0	0	3	0	0	0	0	0	0	0
6503	32	21	32	2	0	0	5	1	0	2	0	0	1	1
6503	33	20	2	0	0	0	0	0	3	0	0	2	0	1
6503	34	23	26	0	0	3	4	0	2	0	0	0	0	1
6503	35	22	137	2	0	14	16	2	0	0	0	0	0	0
6503	36	17	3	0	0	0	0	0	0	0	0	1	0	0
6503	37	18	1	0	0	0	0	1	0	0	0	1	0	0
6503	38	18	1	1	0	0	0	0	0	0	0	0	0	0
6503	39	22	0	0	0	0	0	0	1	0	0	0	0	0
6503	40	29	1	0	0	0	2	1	0	0	0	0	0	0
6503	41	24	1	0	0	0	1	0	0	0	0	0	0	0
6503	42	23	5	0	0	0	0	0	0	0	0	0	0	0
6503	43	23	5	0	0	0	2	0	0	0	0	0	0	0
6503	44	22	0	0	0	0	1	0	0	0	0	0	0	0
6503	45	15	0	0	0	0	0	0	0	0	0	0	0	0
6503	46	19	0	0	0	1	0	5	0	0	0	0	0	0
6503	47	17	60	9	0	0	8	2	0	0	0	0	0	0
6503	48	23	3	0	0	0	3	0	0	0	0	0	0	0
6503	49	25	10	0	0	0	3	0	0	0	0	0	0	0
6503	50	25	2	0	0	0	0	1	1	0	0	0	0	0
6503	51	24	1	0	0	0	0	0	0	0	0	0	0	0
6503	52	21	1	1	0	0	0	0	0	0	0	0	0	0
6503	53	13	30	0	0	0	0	0	0	0	0	0	0	0
6503	54	16	4	2	0	0	1	0	0	1	0	0	0	0
6503	55	16	1	0	0	0	0	0	0	0	0	0	0	0
6503	56	20	0	0	0	0	0	0	0	0	0	1	0	0
6503	57	22	0	0	0	0	0	0	0	0	0	0	0	0
6503	69	13	0	0	0	0	0	1	0	0	0	0	0	0
6503	70	14	0	0	0	0	0	0	0	0	0	0	0	0
6503	71	12	3	0	0	0	0	0	0	0	0	0	0	0
6503	72	9	1	0	0	0	0	2	0	0	0	0	1	0
6503	73	10	8	0	0	0	1	0	0	0	0	0	0	0
6503	74	11	4	0	0	0	0	0	0	0	0	0	0	0
6503	75	12	0	0	0	0	0	0	0	0	0	0	0	0
6503	76	9	0	0	0	0	0	0	0	0	0	0	0	0
6503	77	7	7	0	0	0	5	0	0	0	0	0	0	0
6503	78	9	1	0	0	0	0	0	0	0	0	0	0	0
6503	79	6	0	0	0	0	1	0	0	0	0	0	0	0
6503	80	10	11	0	0	0	1	0	0	0	0	0	0	0
6503	81	10	45	0	0	0	0	0	1	0	0	0	0	0

APPENDIX 2C.(cont.)

CRUISE	STN	D(m)	OLIG	HIR	PONT	ASEL	CHIR	PIS	SPH	AMN	BYTH	V.S	V.T	OTH
6503	83	10	4	0	0	0	0	1	1	0	0	0	0	2
6503	82	7	74	1	0	0	0	0	1	0	3	0	0	0
6504	83	7	0	0	0	0	0	0	0	0	0	0	0	0
6504	82	8	82	1	0	0	0	0	1	0	0	0	0	2
6504	81	9	0	0	0	0	0	0	0	0	0	0	0	0
6504	80	10	7	0	0	0	0	0	0	0	0	0	0	0
6504	76	10	2	0	0	0	0	0	0	0	0	0	0	0
6504	75	11	12	0	0	0	0	0	0	0	0	0	0	0
6504	74	11	10	0	0	0	1	0	0	0	0	0	0	0
6504	73	11	11	0	0	0	0	0	0	0	0	0	0	1
6504	72	12	23	0	0	0	2	3	0	0	0	0	2	2
6504	71	12	0	0	0	0	0	0	0	0	0	0	0	0
6504	70	13	0	0	0	0	0	0	0	0	0	0	0	0
6504	69	12	2	2	0	0	0	0	0	0	0	0	0	2
6504	68	13	40	5	0	0	1	8	3	0	0	0	0	5
6504	83	7	0	0	0	0	0	0	0	0	0	0	0	0
6504	81	9	0	0	0	0	0	0	0	0	0	0	0	0
6504	78	10	0	0	0	0	0	0	0	0	0	0	0	0
6504	67	14	35	2	0	0	1	12	0	0	0	0	2	4
6504	66	14	48	2	0	0	0	29	0	0	0	1	1	3
6504	65	14	71	0	0	0	3	21	0	0	0	0	1	11
6504	64	16	0	0	0	0	0	0	0	0	0	0	0	0
6504	63	17	8	0	0	0	0	0	0	0	0	0	0	0
6504	62	19	24	0	0	0	7	17	0	0	0	0	0	2
6504	61	21	2	0	0	0	0	0	0	0	0	0	0	0
6504	60	22	0	0	0	0	1	0	0	0	0	0	0	0
6504	59	22	14	0	0	0	0	0	0	0	0	0	0	0
6504	58	22	1	0	0	0	0	0	0	0	0	0	0	0
6504	57	21	0	0	0	0	0	0	0	0	0	0	0	0
6504	56	19	0	0	0	0	0	0	0	0	0	0	0	0
6504	55	17	212	0	0	0	3	9	0	0	0	0	0	1
6504	54	15	81	0	0	0	1	1	0	0	0	0	0	0
6504	53	12	20	1	0	0	0	0	0	0	0	0	0	0
6504	52	22	0	0	0	0	1	0	0	0	0	0	0	0
6504	51	24	0	0	0	0	0	0	0	0	0	0	0	0
6504	50	25	5	0	0	0	0	1	0	0	0	0	0	0
6504	49	25	4	0	0	0	0	1	0	0	0	0	0	0
6504	48	23	3	0	0	0	0	0	1	0	0	0	0	0
6504	47	18	20	0	0	0	4	0	0	0	0	0	0	0
6504	46	18	0	0	0	0	0	0	0	0	0	0	0	0
6504	45	17	2	0	0	0	0	4	1	1	0	0	0	0
6504	44	21	0	0	0	0	0	0	0	0	0	0	0	1
6504	43	23	0	0	0	0	0	0	0	0	0	0	0	0
6504	42	23	6	0	0	0	0	2	0	0	0	0	0	0
6504	41	24	5	0	0	0	0	0	1	0	0	0	0	0
6504	40	24	1	0	0	0	0	0	0	0	0	0	0	0
6504	39	23	1	0	0	1	2	0	0	0	0	0	0	0
6504	38	17	1	0	0	0	0	0	0	0	0	0	0	0
6504	37	18	1	0	0	0	0	1	0	0	0	0	0	0
6504	36	17	0	0	0	0	0	0	0	0	0	0	0	0
6504	35	23	9	0	0	0	4	1	0	0	0	0	0	0
6504	34	23	45	1	0	0	2	0	0	0	0	0	0	0
6504	33	22	2	0	0	0	1	0	0	0	0	0	0	0
6504	32	22	61	0	0	2	4	2	1	0	0	1	1	0
6504	31	21	0	0	0	0	0	0	0	0	0	0	0	0
6504	30	19	1	0	0	0	0	1	0	0	0	0	0	1
6504	29	14	0	2	0	0	0	0	0	0	0	0	0	0
6504	28	17	2	1	0	0	0	0	0	0	0	0	0	0
6504	27	15	11	1	0	0	18	0	2	1	0	0	0	10
6504	26	17	7	0	0	0	1	16	3	6	0	1	0	1
6504	25	18	0	0	15	0	0	4	2	0	0	1	0	1
6504	24	20	15	1	0	0	0	0	0	0	0	0	0	0
6504	23	24	12	0	2	0	0	4	0	0	0	0	0	0
6504	22	10	0	0	0	0	0	0	0	0	0	0	0	0
6504	21	26	1	0	5	0	0	0	0	0	0	0	0	0
6504	20	20	0	0	0	0	0	0	0	0	0	0	0	0
6504	19	38	7	0	13	0	0	0	0	0	0	0	0	25

APPENDIX 2C.(cont.)

CRUISE	STN	D(m)	OLIG	HIR	PONT	ASEL	CHIR	PIS	SPH	AMN	BYTH	V.S	V.T	OTH
6504	18	48	1	0	0	0	0	0	0	0	0	0	0	0
6504	17	55	115	0	8	0	0	0	0	0	0	0	0	0
6504	16	40	100	0	67	0	0	2	0	0	0	0	0	0
6504	14	19	16	0	32	0	11	1	0	0	0	0	1	7
6504	13	21	6	0	2	0	6	1	1	1	0	0	0	2
6504	11	34	2	0	1	0	1	0	0	0	0	0	0	0
6504	10	42	2	0	1	0	0	1	0	0	0	0	0	0
6504	9	46	0	0	0	0	0	0	0	0	0	0	0	0
6504	8	19	1	0	0	0	0	0	0	0	0	0	0	1
6504	7	20	13	1	0	0	5	1	0	0	0	0	0	0
6504	6	19	1	0	0	0	1	0	0	2	0	0	0	0
6504	5	24	7	0	0	0	2	0	0	0	0	0	0	0
6504	4	14	14	4	0	0	1	0	0	0	0	0	0	0
6504	3	19	19	1	0	0	13	7	0	0	0	2	0	0
6504	2	25	59	2	0	1	15	5	0	0	0	0	0	0
6504	1	14	34	0	10	0	1	0	0	0	0	0	0	0
6506	83	7	19	1	0	0	0	0	0	0	0	0	0	0
6506	82	8	25	0	0	0	0	0	0	0	0	0	0	0
6506	81	9	0	0	0	0	0	0	0	0	0	0	0	2
6506	80	9	0	0	0	0	0	0	0	0	0	0	0	0
6506	78	10	2	0	0	0	0	0	0	0	0	0	0	0
6506	76	10	0	0	0	0	0	0	0	0	0	0	0	0
6506	75	11	1	0	0	0	0	0	0	0	0	0	0	0
6506	74	11	2	0	0	0	0	0	0	0	0	0	0	0
6506	73	11	1	12	0	0	0	0	0	0	0	0	0	0
6506	72	12	8	0	0	0	4	0	0	0	0	0	0	1
6506	71	14	0	0	0	0	0	0	0	0	0	0	0	0
6506	70	14	0	0	0	0	0	0	0	0	0	0	0	0
6506	69	12	0	0	0	0	0	0	0	0	0	0	0	0
6506	68	13	43	1	0	0	3	2	1	0	0	0	0	0
6506	67	14	38	0	0	0	10	12	2	0	0	1	0	0
6506	66	14	65	0	0	1	3	3	0	0	0	0	1	0
6506	65	14	10	0	0	6	0	3	0	0	0	0	1	1
6506	64	17	11	0	0	0	1	0	0	0	0	0	0	0
6506	63	18	23	0	0	0	2	17	0	0	0	0	0	2
6506	62	20	4	0	0	0	0	0	0	0	0	0	0	0
6506	61	22	2	0	0	0	0	1	0	0	0	0	0	0
6506	60	22	0	0	0	0	0	0	1	0	0	0	0	0
6506	59	22	0	0	0	0	1	0	0	0	0	0	0	0
6506	58	22	3	0	0	0	0	0	0	0	0	0	0	0
6506	57	21	1	0	0	0	0	0	0	0	0	0	0	0
6506	56	20	3	0	0	0	0	1	0	0	0	0	0	0
6506	55	17	0	0	0	0	0	0	0	0	0	0	0	0
6506	54	16	1	0	0	0	0	0	0	0	0	0	0	0
6506	53	14	0	0	0	0	0	1	0	0	0	0	0	3
6506	52	22	0	0	0	0	0	0	0	0	0	0	0	0
6506	51	25	0	0	0	0	0	1	0	0	0	0	0	0
6506	50	26	4	0	0	0	0	0	0	0	0	0	1	0
6506	49	26	2	0	0	0	0	0	0	0	0	0	0	0
6506	48	22	2	0	0	0	2	0	0	0	0	0	0	0
6506	47	17	12	0	0	0	1	1	0	0	0	0	0	0
6506	46	18	18	2	0	1	8	1	1	0	0	0	0	8
6506	45	16	1	1	0	0	3	2	1	0	0	0	0	2
6506	44	21	1	0	0	0	0	0	0	0	0	0	0	0
6506	43	22	20	0	0	0	1	0	0	0	0	0	0	0
6506	42	24	1	0	0	0	0	0	0	1	0	0	0	0
6506	41	23	3	0	0	0	0	0	0	0	0	0	0	0
6506	40	25	22	0	0	1	1	0	0	0	0	0	0	0
6506	39	24	0	0	0	0	1	0	0	0	0	0	0	0
6506	38	20	0	0	0	0	0	0	0	0	0	0	0	0
6506	37	19	0	0	0	0	1	0	0	0	0	0	0	0
6506	36	18	45	0	0	1	26	12	0	2	0	1	0	4
6506	35	22	29	0	0	1	8	4	2	0	0	0	0	0
6506	34	22	32	0	0	0	4	0	2	0	0	0	0	0
6506	33	21	73	0	0	2	3	8	5	0	0	8	0	2
6506	32	21	63	0	0	1	8	0	2	1	0	2	0	0

APPENDIX 2C.(cont.)

CRUISE	STN	D(m)	OLIG	HIR	PONT	ASEL	CHIR	PIS	SPH	AMN	BYTH	V.S	V.T	OTH
6506	31	20	12	1	0	1	5	2	0	1	0	0	1	0
6506	30	18	33	3	0	0	6	1	0	1	0	0	0	0
6506	29	15	25	0	2	1	0	1	0	0	0	0	0	0
6506	28	19	0	1	0	0	0	0	0	0	0	0	0	0
6506	27	18	3	1	0	0	1	0	0	0	0	0	0	0
6506	26	18	9	0	39	0	1	21	3	6	0	1	0	0
6506	25	14	0	0	40	0	0	5	0	3	0	3	0	0
6506	24	19	23	0	0	0	0	0	0	0	0	0	0	0
6506	23	23	175	1	2	3	7	21	2	0	0	0	0	1
6506	22	10	0	0	0	0	0	3	1	0	0	0	0	0
6506	21	25	65	0	201	4	6	14	0	0	0	1	0	8
6506	20	18	9	0	27	0	0	2	0	0	0	0	0	0
6506	19	40	18	0	0	0	0	1	0	0	0	1	0	0
6506	18	48	31	0	14	0	0	0	0	0	0	0	0	0
6506	17	59	31	0	4	0	0	0	0	0	0	0	0	0
6506	16	38	24	0	2	0	0	1	0	0	0	0	0	0
6506	15	20	2	0	0	0	0	0	1	0	0	0	0	0
6506	14	20	2	0	10	0	7	0	0	0	0	0	0	2
6506	13	19	2	1	2	0	5	0	1	0	0	0	0	1
6506	12	20	0	0	0	1	25	0	1	0	0	0	0	1
6506	11	31	18	0	9	0	2	0	0	0	0	0	0	1
6506	10	45	3	0	1	0	0	0	0	0	0	0	0	0
6506	9	43	1	0	0	0	0	0	0	0	0	0	0	0
6506	8	19	0	0	0	0	0	0	0	0	0	0	0	0
6506	7	20	1	0	1	0	1	0	1	1	0	1	0	0
6506	6	19	0	0	0	0	4	0	0	0	3	0	0	1
6506	5	24	13	0	0	0	3	1	0	0	0	0	0	0
6506	4	16	0	0	0	0	0	0	0	0	0	0	0	0
6506	3	19	0	0	0	0	0	0	0	0	0	0	0	0
6506	2	26	16	0	0	0	14	3	0	0	0	0	0	0
6506	1	16	2	0	4	0	6	3	0	1	0	0	0	2
6508	83	10	0	0	0	0	0	0	0	0	0	0	0	0
6508	82	8	16	2	0	0	0	51	1	0	2	0	0	1
6508	81	8	3	0	0	0	0	0	0	0	0	0	0	0
6508	80	9	29	2	0	0	2	0	0	0	0	0	0	0
6508	78	10	1	0	0	0	0	1	0	0	0	0	0	0
6508	76	10	2	0	0	0	0	0	0	0	0	0	0	0
6508	75	10	0	0	0	0	0	0	0	0	0	0	0	0
6508	74	11	2	0	0	0	0	0	0	0	0	0	0	0
6508	73	10	7	0	0	0	4	1	0	0	1	0	1	0
6508	72	11	6	0	0	0	20	0	0	0	0	0	0	0
6508	71	12	3	0	0	0	5	0	0	0	0	0	0	0
6508	70	14	3	0	0	0	1	0	0	0	0	0	0	0
6508	69	12	1	12	0	1	0	0	0	0	0	1	0	3
6508	68	12	10	0	0	0	18	6	1	3	0	0	0	0
6508	67	13	0	0	0	0	2	0	0	0	0	0	0	0
6508	66	13	65	0	0	2	7	25	0	0	0	0	3	0
6508	65	13	26	0	0	0	0	8	0	0	0	0	1	1
6508	62	19	3	0	0	0	0	3	0	0	0	0	0	0
6508	61	21	2	0	0	0	0	0	0	0	0	0	0	0
6508	60	22	1	0	0	0	0	0	0	0	0	0	0	0
6508	59	22	0	0	0	0	0	0	0	0	0	0	0	0
6508	58	22	8	0	0	0	0	0	0	0	0	0	0	0
6508	57	21	0	0	0	0	0	0	0	0	0	0	0	0
6508	56	19	0	0	0	0	0	0	0	0	0	0	0	0
6508	55	16	45	0	0	0	4	0	0	0	0	0	0	0
6508	54	16	6	0	0	0	0	0	0	0	0	0	0	0
6508	53	11	0	0	0	0	0	0	0	0	0	0	0	0
6508	52	21	0	0	0	0	0	0	0	0	0	0	0	0
6508	51	24	0	0	0	0	0	0	0	0	0	0	0	0
6508	50	25	1	0	0	0	0	3	0	0	0	0	0	0
6508	49	25	6	0	0	0	0	0	0	0	0	0	0	0
6508	48	23	5	0	0	0	2	1	0	0	0	0	0	1
6508	47	18	0	0	0	0	3	2	0	0	0	0	0	1
6508	46	19	3	1	0	1	2	7	0	0	0	0	0	0
6508	45	16	0	0	0	0	0	0	1	0	0	0	0	0
6508	44	21	0	0	0	0	0	0	0	0	0	0	0	0

APPENDIX 2C.(cont.)

CRUISE	STN	D(m)	OLIG	HIR	PONT	ASEL	CHIR	PIS	SPH	AMN	BYTH	V.S	V.T	OTH
6508	43	22	0	0	0	0	0	0	0	0	0	0	0	0
6508	42	24	4	0	0	0	0	0	0	0	0	0	0	0
6508	41	23	7	0	0	0	1	0	0	0	0	0	0	0
6508	40	24	2	0	0	0	0	0	0	0	0	0	0	0
6508	39	23	0	0	0	0	0	0	0	0	0	0	0	0
6508	38	19	0	0	0	0	0	0	0	0	0	0	0	0
6508	37	19	0	0	0	0	0	0	0	0	0	0	0	0
6508	36	16	24	1	0	0	1	0	2	0	0	0	0	0
6508	35	22	25	0	0	0	4	1	0	0	0	2	0	0
6508	34	23	7	0	0	0	0	0	2	0	0	0	0	0
6508	33	22	23	0	0	1	1	4	0	0	0	1	0	1
6508	32	22	54	2	0	0	3	3	0	0	0	0	1	1
6508	31	20	14	0	0	2	0	0	0	0	0	0	0	0
6508	30	18	3	0	0	0	2	0	0	0	0	0	0	1
6508	29	15	0	0	0	0	0	0	0	0	0	0	0	0
6508	28	19	3	0	0	0	0	0	4	0	0	0	0	2
6508	27	16	0	0	0	0	0	0	0	0	0	0	0	0
6508	26	18	0	0	0	0	16	0	0	0	0	0	0	7
6508	25	16	0	0	0	0	0	0	1	0	0	0	0	1
6508	24	19	60	7	0	0	4	0	0	0	0	0	0	0
6508	23	25	64	1	0	1	1	13	0	0	0	0	0	0
6508	22	10	0	0	0	0	10	0	1	0	0	0	0	1
6508	21	25	2	0	9	0	0	2	0	0	0	0	0	0
6508	20	19	7	0	0	0	1	0	0	0	0	0	0	0
6508	19	38	3	0	10	0	0	0	0	0	0	0	0	0
6508	18	46	2	0	1	0	0	0	0	0	0	0	0	0
6508	17	55	70	1	2	0	0	0	0	0	0	0	0	2
6508	16	38	12	0	10	0	0	0	0	0	0	0	0	0
6508	15	20	0	0	0	0	0	0	0	0	0	0	0	0
6508	14	19	0	0	12	0	0	0	1	0	0	0	0	0
6508	13	19	0	0	3	0	4	0	1	0	0	0	0	0
6508	12	22	0	0	0	0	2	0	0	0	0	0	0	0
6508	11	32	3	0	3	0	0	0	0	0	0	0	0	4
6508	10	42	1	0	0	0	0	0	0	0	0	0	0	14
6508	9	46	0	0	0	0	0	0	0	0	0	0	0	0
6508	8	20	3	0	0	0	5	0	0	0	0	0	0	1
6508	7	20	3	0	0	0	3	0	1	0	1	0	0	0
6508	6	18	1	0	0	0	0	1	2	0	0	0	0	3
6508	5	23	1	0	0	0	3	0	0	0	0	0	0	1
6508	4	14	0	0	0	0	1	0	0	0	0	0	0	0
6508	3	18	4	0	0	0	5	0	1	0	0	0	0	0
6508	2	25	0	0	0	0	5	0	0	0	0	1	0	0
6508	1	14	0	0	7	0	4	2	0	0	0	0	0	0
6510	82	8	5	1	0	0	0	0	0	0	0	0	0	0
6510	81	8	0	1	0	0	0	0	0	0	0	0	0	0
6510	80	9	0	0	0	0	0	0	0	0	0	0	0	0
6510	78	7	0	0	0	0	0	0	0	0	0	0	0	0
6510	76	9	1	0	0	0	0	0	0	0	0	0	0	0
6510	75	11	0	0	0	0	0	0	0	0	0	0	0	0
6510	74	11	4	0	0	0	0	0	2	0	1	0	0	0
6510	73	12	1	0	0	0	2	0	0	0	0	0	0	0
6510	72	13	6	1	0	0	0	0	0	0	0	0	0	1
6510	71	12	0	0	0	1	11	0	0	0	0	0	0	0
6510	70	12	0	0	0	0	2	0	0	0	0	0	0	0
6510	68	12	2	0	0	0	6	0	0	0	0	0	0	0
6510	67	13	2	0	0	0	8	0	0	0	0	0	0	0
6510	66	13	3	0	0	0	14	0	0	0	0	0	0	0
6510	65	14	8	0	0	0	2	0	0	0	0	0	0	0
6510	64	16	0	0	0	0	4	0	1	0	0	0	0	0
6510	63	19	1	0	0	0	0	0	0	0	0	0	0	0
6510	62	21	2	0	0	0	0	0	0	0	0	0	0	0
6510	61	22	2	0	0	0	0	0	0	0	0	0	0	0
6510	60	21	0	0	0	0	0	1	0	0	0	0	0	0
6510	59	23	0	0	0	0	1	0	0	0	0	0	0	0
6510	58	22	1	0	0	0	0	0	0	0	0	0	0	0
6510	57	22	0	0	0	0	0	0	0	0	0	0	0	0
6510	56	19	1	0	0	0	0	0	0	0	0	0	0	0

APPENDIX 2C.(cont.)

CRUISE	STN	D(m)	OLIG	HIR	PONT	ASEL	CHIR	PIS	SPH	AMN	BYTH	V.S	V.T	OTH
6510	55	17	9	0	0	0	0	0	0	0	0	0	0	0
6510	54	16	4	0	0	0	1	0	0	0	0	0	0	0
6510	53	15	2	0	0	0	4	0	0	0	0	0	0	0
6510	52	23	1	0	0	0	0	1	0	0	0	0	0	0
6510	51	24	0	0	0	0	0	0	0	0	0	0	0	0
6510	50	26	8	0	0	1	0	1	1	0	0	0	0	0
6510	49	26	3	0	0	0	0	0	0	0	0	0	0	0
6510	48	24	4	0	0	0	3	0	1	0	0	0	0	0
6510	47	18	1	0	0	0	0	0	0	0	0	0	0	0
6510	46	18	0	0	0	0	0	0	0	0	0	0	0	0
6510	45	16	0	0	0	0	0	0	0	0	0	0	0	0
6510	44	21	0	0	0	0	0	0	0	0	0	0	0	0
6510	43	22	1	0	0	0	0	1	0	0	0	0	0	0
6510	42	24	1	0	0	0	0	0	0	0	0	0	0	0
6510	41	25	1	0	0	0	0	0	0	0	0	0	0	0
6510	40	25	2	0	0	1	1	0	0	0	0	0	0	0
6510	39	24	2	0	0	0	0	0	0	0	0	0	0	0
6510	38	19	13	0	0	2	0	0	0	0	0	0	0	0
6510	37	17	0	0	0	0	0	0	0	1	0	0	0	0
6510	36	16	2	0	0	0	1	0	0	0	0	0	0	0
6510	35	22	1	0	0	0	0	0	0	0	0	0	0	0
6510	34	23	49	2	0	1	3	2	0	0	0	1	0	0
6510	33	22	0	0	0	0	0	0	0	0	0	0	0	0
6510	32	21	3	0	0	1	1	0	0	1	0	0	0	0
6510	31	21	0	0	0	0	1	0	0	0	0	0	0	0
6510	30	20	0	0	0	0	3	0	0	0	0	0	0	0
6510	28	18	0	2	0	0	1	0	0	0	0	0	0	0
6510	27	16	1	0	0	0	9	0	1	0	0	0	0	0
6510	26	19	2	0	1	0	4	3	0	0	0	0	0	1
6510	25	15	0	0	0	0	0	0	0	0	0	0	0	0
6510	24	21	28	0	0	0	0	0	0	0	0	0	0	0
6510	23	23	84	0	0	5	6	2	0	0	0	0	0	0
6510	22	10	1	0	0	0	9	0	2	0	0	0	0	1
6510	21	25	1	0	7	0	2	2	0	0	0	0	0	0
6510	20	20	8	0	11	3	6	1	0	0	0	0	0	1
6510	19	41	12	0	18	0	0	0	0	0	0	0	0	0
6510	18	46	2	0	1	0	0	0	0	0	0	0	0	0
6510	17	60	14	0	0	0	0	0	0	0	0	0	0	0
6510	16	42	11	0	1	0	0	0	0	0	0	0	0	0
6510	15	20	1	2	0	0	1	0	0	0	0	0	0	0
6510	14	20	30	0	13	0	10	0	0	0	0	0	0	2
6510	13	20	4	0	0	1	8	0	0	0	0	0	0	1
6510	12	21	0	0	0	0	0	0	0	0	0	0	0	0
6510	11	34	4	0	5	0	0	1	0	0	0	0	0	0
6510	10	43	6	0	2	0	0	1	0	0	0	0	0	0
6510	9	45	2	0	0	0	0	0	0	0	0	0	0	0
6510	8	21	0	0	0	0	0	0	0	0	0	0	0	1
6510	7	21	0	0	0	1	19	0	0	0	0	0	0	6
6510	6	19	0	0	0	0	0	0	0	0	0	0	0	0
6510	5	25	1	0	0	0	3	5	0	0	0	0	0	0
6511	1	16	2	0	6	0	7	5	2	0	0	2	0	0
6511	2	26	60	2	0	3	1	0	0	0	0	0	0	1
6511	3	19	56	6	0	0	26	3	0	0	0	2	0	1
6511	4	15	0	1	0	0	1	0	0	0	0	0	0	0
6511	5	25	30	0	0	1	0	2	0	0	0	0	0	1
6511	6	19	20	0	0	0	1	1	3	0	2	0	0	4
6511	7	20	31	0	1	0	1	4	3	0	0	0	0	6
6511	8	21	0	0	0	0	0	0	0	0	0	0	0	0
6511	9	44	0	0	2	0	1	0	0	0	0	0	0	0
6511	10	46	1	0	1	0	0	3	0	0	0	0	0	8
6511	11	33	35	0	10	0	0	0	0	0	0	0	0	1
6511	12	21	10	0	0	8	2	1	0	1	0	0	2	3
6511	13	19	1	1	0	0	0	0	1	0	0	0	0	0
6511	14	19	13	0	17	0	6	1	0	0	1	0	0	2
6511	15	19	0	0	0	0	0	0	0	0	0	0	0	0
6511	16	21	0	0	0	0	0	0	0	0	0	0	0	0
6511	17	60	141	2	4	0	0	0	0	0	0	0	0	0

APPENDIX 2C.(cont.)

CRUISE	STN	D(m)	OLIG	HIR	PONT	ASEL	CHIR	PIS	SPH	AMN	BYTH	V.S	V.T	OTH
6511	18	48	1	0	0	0	0	0	0	0	0	0	0	1
6511	19	39	36	0	13	0	0	0	0	0	0	0	0	1
6511	21	23	12	0	103	0	2	6	0	0	0	0	0	0
6511	22	10	0	0	0	0	0	0	1	0	0	2	0	0
6511	23	24	2	0	0	0	0	0	0	0	0	0	0	0
6511	24	20	19	0	0	0	2	0	0	0	0	0	0	1
6511	25	14	0	0	8	0	0	5	2	6	0	3	0	6
6511	26	19	0	1	0	0	0	0	0	0	0	0	0	0
6511	27	17	1	0	0	0	3	0	0	0	0	0	0	0
6511	28	18	1	0	0	1	2	1	1	0	0	0	0	1
6511	29	16	27	0	0	0	7	0	0	0	0	0	0	0
6511	30	20	1	0	0	2	12	0	0	0	0	0	0	1
6511	31	20	1	0	0	0	0	0	0	0	0	0	0	0
6511	32	22	33	0	0	4	1	0	0	0	0	0	0	1
6511	33	22	39	0	0	4	1	0	0	0	0	0	0	2
6511	34	22	11	0	0	0	4	0	1	0	0	0	0	0
6511	35	21	36	0	0	1	1	1	0	0	0	0	0	0
6511	36	16	1	0	0	0	3	0	0	0	0	0	0	0
6511	37	18	0	0	0	0	0	0	0	0	0	0	0	0
6511	38	18	11	1	0	0	0	0	0	0	0	0	0	0
6511	39	23	1	0	0	0	1	0	0	0	0	0	0	0
6511	40	24	0	0	0	0	0	1	1	0	0	0	0	0
6511	41	23	1	0	0	1	0	1	0	0	0	0	0	0
6511	42	24	7	0	0	0	0	0	0	0	0	0	0	0
6511	43	23	0	0	0	0	0	0	0	0	0	0	0	0
6511	44	21	0	0	0	1	0	1	0	0	0	0	0	0
6511	45	16	1	0	0	1	0	1	1	0	0	0	0	0
6511	83	7	1	4	0	0	0	0	42	0	0	0	0	0
6511	82	8	0	0	0	0	0	0	39	0	0	0	0	0
6511	81	9	1	0	0	0	0	0	9	0	0	0	0	0
6511	80	8	1	0	0	0	2	0	0	0	0	0	0	0
6511	78	10	1	0	0	0	1	0	0	0	0	0	0	0
6511	76	10	1	0	0	0	0	0	0	0	0	0	0	0
6511	75	11	1	0	0	0	0	0	1	0	0	0	0	0
6511	74	11	0	0	0	0	0	0	0	0	2	0	0	0
6511	73	9	0	0	0	0	0	0	0	0	0	0	0	0
6511	72	13	1	0	0	0	5	1	0	0	0	0	0	0
6511	71	14	0	0	0	0	2	0	0	0	0	0	0	0
6511	70	13	0	0	0	0	3	0	0	0	0	0	0	0
6511	69	12	0	0	0	1	0	0	0	0	0	0	0	1
6511	68	14	27	1	0	0	3	7	1	0	0	0	0	7
6511	67	13	10	0	0	0	1	4	0	0	0	0	0	0
6511	66	13	34	0	0	1	0	14	0	0	0	0	0	0
6511	65	14	64	0	0	8	3	6	3	0	0	2	0	1
6511	64	16	23	0	0	0	0	0	0	0	0	0	0	0
6511	63	18	7	0	0	0	0	0	0	0	0	0	0	0
6511	61	22	3	0	0	0	0	1	0	0	0	0	0	0
6511	60	24	0	0	0	0	0	0	0	0	0	0	0	0
6511	59	23	0	0	0	0	0	0	0	0	0	0	0	0
6511	58	23	4	0	0	0	0	0	0	0	0	0	0	0
6511	57	22	1	0	0	0	0	0	0	0	0	0	0	0
6511	56	20	1	0	0	0	0	0	0	0	0	0	0	0
6511	55	17	81	0	0	0	0	2	0	0	0	0	0	0

APPENDIX 2C.(cont.)

CRUISE	STN	D(m)	OLIG	HIR	PONT	ASEL	CHIR	PIS	SPH	AMN	BYTH	V.S	V.T	OTH
6512	1	13	1	0	0	0	2	0	3	1	0	2	0	1
6512	2	23	50	1	0	9	6	0	0	0	0	0	0	24
6512	3	16	20	1	0	0	4	4	1	0	2	1	0	2
6512	4	11	1	0	0	0	0	0	0	0	0	0	0	1
6512	5	22	24	1	0	0	2	0	0	0	0	1	0	1
6512	6	16	2	1	0	0	0	0	0	1	1	0	0	1
6512	7	16	10	1	0	1	15	0	1	0	0	1	0	7
6512	65	12	66	1	0	8	1	13	3	0	0	6	5	0
6512	66	13	279	2	0	2	5	26	0	0	0	0	10	0
6512	67	10	0	0	0	0	0	0	0	0	0	0	0	0
6512	68	10	82	7	0	0	13	3	0	0	2	8	4	0
6512	69	11	0	0	0	0	0	0	0	0	0	0	0	0
6512	73	10	14	1	0	0	9	0	0	0	0	0	0	0
6512	74	11	10	0	0	0	1	0	1	0	0	1	0	0
6512	75	10	7	0	0	0	1	0	0	0	0	0	0	0
6512	76	8	1	0	0	0	2	0	0	0	0	0	0	0
6512	78	8	0	0	0	0	0	0	0	0	0	0	0	0
6512	80	6	0	0	0	0	0	0	0	0	0	0	0	0
6512	81	9	6	0	0	0	0	0	7	1	0	0	0	0
6512	82	8	12	2	0	0	8	4	186	12	1	2	3	0
6512	83	5	5	2	0	0	4	1	2	3	2	0	0	4

APPENDIX 3. Benthic biomass (vol. wet ml. sample $^{-1}$) of the major invertebrate groups in Lake Erie, during 1963-1965. STN - station number designation from that of cruise 6318; D(m) - depth in meters; OLIG - Oligochaeta; HIR - Hirudinea; PONT - Pontoporeia hoyi; ASEL -Asellus; CHIR - Chironomidae; PIS - Pisidium spp.; SPH - Sphaerium spp.; AMN - Amnicola spp; BYTH - Bythinia tentaculata; V.S - Valvata sincera; V.T - V. tricarinata; OTH - other taxa.

APPENDIX 3A. Benthic biomass (vol. wet ml. sample-1 of the major invertebrate groups in Lake Erie, during the 1963 G.L.I. cruises.

CRUISE	STN	D(m)	OLIG	HIR	PONT	ASEL	CHIR	PIS	SPH	AMN	BYTH	V.S	V.T	OTH
6303	2	27	0.02	0.01	0	0.055	0.015	0	0	0	0	0	0	0
6303	3	16	0.028	0	0	0	0.029	0	0.002	0.00	0	0.001	0	0
6303	7	21	0	0	0	0.007	0.013	0	0	0	0	0	0	0
6303	8	19	0	0	0	0	0	0	0	0	0	0	0	0
6303	9	42	0.016	0	0.01	0	0	0	0	0	0	0	0	0
6303	10	37	0.01	0	0	0	0	0	0	0	0	0	0	0
6303	11	33	0.14	0	0.05	0	0.01	0	0	0	0	0	0	0
6303	12	18	0.004	0	0	0	0.03	0	0	0	0	0	0	0.166
6303	13	22	0.001	0	0.01	0	0.112	0	0.004	0	0	0	0	0
6303	14	15	0	0	0	0	0.036	0	0.024	0	0	0	0	0
6303	15	16	0.004	0	0	0	0.015	0.015	0	0	0	0	0	0
6303	16	25	0	0.005	0	0	0.044	0	0	0	0	0	0	0
6303	17	58	0.81	0	0	0.063	0.027	0	0	0	0	0	0	0
6303	18	59	0	0	0	0	0	0	0	0	0	0	0	0
6303	19	43	0.12	0	0.028	0	0.001	0	0	0	0	0	0	0
6303	20	20	0.021	0.003	0.018	0	0	0	0	0	0	0.018	0	0
6303	21	22	0.012	0	0.025	0.01	0.002	0	0	0	0	0	0	0
6303	22	17	0.02	0.015	0	0	0.001	0.03	0.03	0	0	0.004	0	0
6303	23	23	0.086	0	0.043	0	0	0.013	0.232	0.013	0	0.017	0	0.026
6303	25	16	0.003	0	0.027	0	0	0	0	0	0	0	0	0
6303	26	22	0.001	0	0.005	0	0	0.004	0	0	0	0	0	0
6303	27	22	0	0	0	0	0.12	0	0	0	0	0	0	0
6303	28	21	0.01	0	0	0	0	0	0	0	0	0	0	0
6303	29	24	0.01	0	0	0	0	0	0	0	0	0	0	0
6303	31	32	0	0	0	0	0	0	0	0	0	0	0	0
6303	32	30	0.122	0	0	0	0.062	0	0.01	0.006	0	0	0	0
6303	33	31	0.07	0	0	0.014	0	0.021	0.035	0	0	0	0	0
6303	34	32	0.2	0	0	0	0.3	0	0	0	0	0	0	0
6303	35	18	0.26	0	0	0.127	0.104	0.016	0.01	0	0	0	0	0.003
6303	36	14	0.078	0	0	0.014	0.028	0	0	0	0	0	0	0
6303	37	19	0	0	0	0	0	0	0	0	0	0	0	0
6303	38	16	0.02	0	0	0	0	0	0	0	0	0	0	0
6303	39	19	0.01	0	0	0	0	0	0	0	0	0	0	0
6303	40	26	0.09	0	0	0	0	0	0	0	0	0	0	0
6303	41	22	0.01	0	0	0	0	0	0	0	0	0	0.01	0
6303	42	22	0	0	0	0	0	0	0	0	0	0	0	0
6303	43	22	0.027	0	0	0	0.022	0	0	0	0	0	0	0
6303	44	14	0.18	0	0	0	0	0	0	0	0	0.009	0	0
6303	45	15	0.004	0	0	0	0.005	0	0	0	0	0	0	0
6303	46	15	0	0	0	0	0	0	0	0	0	0	0	0
6303	47	15	0.027	0	0	0	0.063	0	0	0	0	0	0	0
6303	48	19	0.01	0	0	0	0	0	0	0	0	0	0	0
6303	49	25	0.001	0	0	0	0.019	0	0	0	0	0	0	0
6303	50	22	0.1	0	0	0	0	0	0	0	0	0	0	0
6303	51	23	0	0	0	0	0	0	0	0	0	0	0	0
6303	52	21	0	0	0	0	0	0	0	0	0	0	0	0
6303	53	11	0.1	0	0	0	0	0	0	0	0	0	0	0
6303	55	20	0.005	0	0	0	0	0.004	0	0	0	0	0	0
6303	56	21	0.24	0	0	0	0.33	0	0	0	0	0	0	0
6303	57	29	0	0	0	0	0	0	0	0	0	0	0	0
6303	58	20	0.02	0	0	0	0	0	0	0	0	0	0	0
6303	59	20	0	0	0	0	0	0	0	0	0	0	0	0
6303	60	24	0.066	0	0	0	0.154	0	0	0	0	0	0	0
6303	61	14	0.03	0	0	0	0	0	0	0	0	0	0	0
6303	62	19	0.13	0	0	0	0.07	0	0	0	0	0	0	0
6303	63	10	0.13	0	0	0	0	0	0	0	0	0	0	0
6303	64	16	0.06	0	0	0	0	0	0	0	0	0	0	0
6303	65	13	0.276	0	0	0	0.046	0.069	0	0	0	0.046	0.023	0
6303	66	14	0.03	0	0	0.003	0.018	0.006	0	0	0	0	0.003	0

APPENDIX 3A. (cont.)

CRUISE	STN	D(m)	OLIG	HIR	PONT	ASEL	CHIR	PIS	SPH	AMN	BYTH	V.S	V.T	OTH
6303	68	12	0.247	0	0	0	0.016	0.016	0.033	0	0	0.016	0	0
6303	69	18	0	0	0	0	0	0	0	0	0	0	0	0
6303	70	15	0	0	0	0	0	0	0	0	0	0	0	0
6303	71	10	0	0	0	0	0.25	0	0	0	0	0	0	0
6303	72	12	0	0	0	0	0	0	0	0	0	0	0	0
6303	73	11	0	0	0	0	0	0	0	0	0	0	0	0
6303	75	9	0.067	0	0	0	0.675	0	0	0	0	0	0	0.007
6303	76	8	0.066	0	0	0	0.066	0	0	0	0	0	0	0
6303	77	5	0.045	0	0	0	0.045	0	0	0	0	0	0	0
6303	78	7	0.057	0	0	0	0	0	0.133	0	0	0	0	0
6303	79	8	0.025	0	0	0	0.144	0	0	0	0	0	0	0
6303	80	9	0	0	0	0	0.05	0	0	0	0	0	0	0
6303	81	8	0.055	0	0	0	0.055	0	0.244	0	0	0	0.007	0.007
6303	82	9	0.539	0	0	0	0.154	0.77	5.39	0.77	0	0	0.077	0
6306	1	14	0	0	0.025	0	0.012	0.02	0.17	0.005	0	0.017	0	0
6306	11	35	0.04	0	0.05	0	0.01	0	0	0	0	0	0	0
6306	17	64	0.55	0	0	0	0	0	0	0	0	0	0	0
6306	18	48	0.009	0	0	0	0	0	0	0	0	0	0	0
6306	21	27	0.016	0	0.01	0	0.003	0	0	0	0	0	0	0
6306	22	12	0.003	0	0	0	0.003	0.011	0.009	0	0	0.018	0	0.016
6306	24	25	3.9	0.1	0	0.05	0.28	0.22	0.03	0	0	0	0	0
6306	25	17	0.003	0	0.036	0	0.003	0.005	0	0.001	0	0.012	0	0
6306	26	25	0.004	0	0	0	0	0	0	0	0	0	0	0.005
6306	27	29	0.082	0	0	0	0.037	0.03	0	0	0	0	0	0
6306	18	20	0	0	0	0	0	0	0	0	0	0	0	0
6306	29	21	0.03	0	0	0	0	0	0	0	0	0	0	0
6306	45	16	0.087	0	0	0	0.001	0	0.012	0	0	0	0	0
6306	44	24	0	0.015	0	0	0	0	0	0	0	0	0	0
6306	42	25	0	0	0	0	0	0	0	0	0	0	0	0
6306	41	23	0.049	0	0.001	0	0.031	0.008	0	0	0	0	0	0
6306	40	25	0	0	0	0	0	0	0	0	0	0	0	0
6306	39	25	0	0	0	0	0	0	0.05	0	0	0	0	0
6306	38	21	0	0	0	0	0.005	0	0	0	0	0	0	0
6306	51	26	0.01	0	0	0	0	0	0	0	0	0	0	0
6306	52	21	0	0	0	0	0	0	0	0	0	0	0	0
6306	53	12	0	0	0	0	0	0	0	0	0	0	0	0
6306	54	14	0.216	0	0	0	0	0	0.012	0	0	0.012	0	0
6306	55	13	0.05	0	0	0	0	0	0	0	0	0	0	0
6306	56	18	0.225	0	0	0	0.275	0	0	0	0	0	0	0
6306	57	20	0	0	0	0	0	0	0	0	0	0	0	0
6306	58	24	0.03	0	0	0	0	0	0	0	0	0	0	0
6306	59	25	0	0	0	0	0	0	0	0	0	0	0	0
6306	60	25	0	0	0	0	0	0	0	0	0	0	0	0
6306	61	24	0.08	0	0	0	0	0	0.02	0	0	0	0	0
6306	62	23	0	0	0	0	0	0	0	0	0	0	0	0
6307	82	9	0.051	0	0	0	0	0	0.034	0.085	0	0	0	0
6307	72	11	0.025	0	0	0	0.185	0	0	0	0	0	0	0
6307	71	12	0.005	0	0	0	0	0	0	0	0	0	0	0
6307	70	15	0.01	0	0	0	0	0	0	0	0	0	0	0
6307	69	13	0	0	0	0	0.027	0	0.135	0	0	0.018	0	0
6307	62	20	0.02	0	0	0	0	0	0.08	0	0	0	0	0
6307	61	22	0.02	0	0	0	0	0	0	0	0	0	0	0
6307	60	22	0.01	0	0	0	0	0	0	0	0	0	0	0
6307	59	22	0.01	0	0	0	0	0	0	0	0	0	0	0
6307	58	22	0.01	0	0	0	0	0	0	0	0	0	0	0
6307	57	20	0	0	0	0	0	0	0	0	0	0	0	0
6307	56	19	0.007	0	0	0	0.056	0.007	0	0	0	0	0	0
6307	51	21	0.02	0	0	0	0	0	0	0	0	0	0	0
6307	50	25	0.02	0	0	0	0	0	0	0	0	0	0	0
6307	49	24	0.02	0	0	0	0	0	0	0	0	0	0	0
6307	48	13	0.006	0	0	0	0	0.004	0	0	0	0	0	0
6307	47	18	0.094	0	0	0	0.012	0.014	0	0	0	0	0	0
6307	46	20	0.003	0	0	0.031	0.007	0	0.024	0	0	0	0	0.003
6307	40	23	0	0	0	0	0	0	0.052	0	0	0.017	0	0
6307	39	23	0	0	0	0	0	0	0	0	0	0	0	0
6307	38	18	0	0	0	0	0	0	0	0	0	0	0	0
6307	37	18	0.01	0	0	0	0	0	0	0	0	0	0	0

APPENDIX 3A. (cont.)

CRUISE	STN	D(m)	OLIG	HIR	PONT	ASEL	CHIR	PIS	SPH	AMN	BYTH	V.S	V.T	OTH
6307	36	16	0.085	0	0	0	0.004	0	0.117	0.243	0	0	0	0
6307	35	21	0.287	0	0	0.066	0.037	0.02	0	0	0	0	0	0
6307	28	18	0.054	0.018	0	0	0.017	0	0	0	0	0	0	0.001
6307	20	18	0.05	0	0	0	0	0	0	0	0	0	0	0
6307	19	37	0.005	0	0	0	0	0	0	0	0	0	0	0
6307	18	45	0.045	0	0.05	0	0.005	0	0	0	0	0	0	0
6307	17	56	0.4	0	0	0	0	0	0	0	0	0	0	0
6307	16	38	0.067	0	0.082	0	0	0	0	0	0	0	0	0
6307	15	18	0.2	0	0	0	0	0	0	0	0	0	0	0
6307	8	19	0	0	0	0	0	0	0	0	0	0	0	0.11
6307	7	20	0	0	0	0	0.012	0	0.03	0	0	0	0	0
6307	6	19	0.04	0.012	0.015	0	0.015	0	0	0	0	0.017	0	0.007
6307	5	23	0.022	0	0	0	0.02	0.005	0	0	0	0	0	0.001
6307	4	15	0	0	0	0	0	0	0	0	0	0	0	0.002
6307	3	17	0.042	0	0	0	0.028	0	0	0	0	0	0	0
6310	1	14	0.027	0	0.009	0	0.018	0.018	0	0	0	0.018	0	0
6310	2	25	0.009	0.006	0	0	0	0.015	0	0	0	0	0	0
6310	3	19	0.006	0	0	0	0.012	0.012	0	0	0	0	0	0
6310	4	12	0.005	0.005	0	0	0.01	0.01	0.01	0.002	0	0.007	0	0
6310	5	23	0.002	0	0	0	0.003	0.005	0	0	0	0	0	0
6310	6	17	0.019	0	0.009	0	0.019	0	0.085	0	0	0.009	0	0.329
6310	7	20	0.105	0	0	0	0	0	0.037	0.007	0	0	0	0
6310	8	24	0.025	0	0.02	0	0.001	0.002	0	0	0	0	0	0.001
6310	9	46	0.01	0	0	0	0	0	0	0	0	0	0	0
6310	10	34	0.03	0	0.06	0	0	0	0	0	0	0	0	0
6310	11	30	0.067	0	0.075	0	0	0.007	0	0	0	0	0	0
6310	12	19	0	0	0	0	0.01	0	0	0	0	0	0	0
6310	13	20	0.02	0.004	0.024	0	0.032	0	0	0	0	0	0	0
6310	14	13	0	0	0.009	0	0.018	0	0	0	0	0	0	0
6310	15	26	0.008	0	0	0	0.012	0	0.02	0	0	0	0	0.063
6310	16	38	0.198	0	0.099	0	0.003	0	0	0	0	0	0	0
6310	17	57	0.01	0	0	0	0	0	0	0	0	0	0	0
6310	18	45	0.015	0	0.015	0	0	0	0	0	0	0	0	0
6310	19	38	0	0	0	0	0	0	0	0	0	0	0	0
6310	20	19	4.125	0	0.495	0	0.055	0.22	0.44	0	0	0	0	0.165
6310	21	23	0.238	0	0.756	0	0.086	0	0	0	0	0	0	0
6310	22	9	0.002	0	0	0	0.008	0	0	0	0	0	0	0
6310	23	22	0.15	0	0.042	0.002	0.002	0.022	0	0	0	0	0	0.03
6310	24	12	0.055	0	0.004	0	0.09	0	0	0	0	0	0	0
6310	25	11	0.006	0	0.018	0	0	0	0	0	0	0.006	0	0
6310	26	20	0	0	0	0	0	0	0	0	0	0	0	0
6310	27	13	0.03	0	0.005	0	0.002	0	0	0	0	0.012	0	0
6310	28	18	0.075	0.005	0	0.015	0	0.005	0	0	0	0	0	0
6310	29	17	0.016	0	0	0.008	0.048	0.008	0	0	0	0	0	0
6310	30	18	0.01	0	0	0.006	0.004	0	0	0	0	0	0	0
6310	31	19	0.005	0	0	0.005	0	0	0	0	0	0	0	0
6310	32	21	0.04	0	0	0	0	0	0	0	0	0	0	0
6310	33	20	0.099	0	0	0	0	0.001	0	0	0	0	0	0
6310	34	22	0.01	0	0	0	0	0	0	0	0	0	0	0
6310	35	22	0.045	0.005	0	0	0	0	0	0	0	0	0	0
6310	36	16	0.049	0	0	0	0	0	0	0	0	0	0	0
6310	37	17	0	0	0	0	0	0	0	0	0	0	0	0
6310	38	18	0.01	0	0	0	0	0	0	0	0	0	0	0
6310	39	22	0	0.005	0	0	0	0	0	0	0	0	0	0
6310	40	22	0	0	0	0	0	0	0	0	0	0	0	0
6310	41	22	0.049	0	0	0	0	0	0	0	0	0	0	0
6310	42	23	0.01	0	0	0	0	0	0	0	0	0	0	0
6310	43	21	0	0	0	0	0	0	0	0	0	0	0	0
6310	44	19	0.01	0	0	0	0	0	0	0	0	0	0	0
6310	46	17	0.151	0	0	0	0.151	0	0.707	0	0	0	0	0
6310	47	17	0.008	0	0	0	0.072	0	0	0	0	0	0	0
6310	48	22	0	0	0	0	0	0	0	0	0	0	0	0
6310	49	23	2.727	0	0	0	0	0.303	0	0	0	0	0	0
6310	50	24	0.01	0	0	0	0	0	0	0	0	0	0	0
6310	51	23	0.03	0	0	0	0	0	0	0	0	0	0	0
6310	52	21	0	0	0	0	0	0	0	0	0	0	0	0
6310	53	12	0.02	0.01	0	0	0	0	0	0	0	0	0	0
6310	54	16	0	0	0	0	0	0	0	0	0	0	0	0

APPENDIX 3A. (cont.)

CRUISE	STN	D(m)	OLIG	HIR	PONT	ASEL	CHIR	PIS	SPH	AMN	BYTH	V.S	V.T	OTH
6310	55	17	0.005	0	0	0	0	0	0	0	0	0.005	0	0
6310	56	17	0.015	0	0	0	0	0	0	0	0	0	0	0
6310	57	22	0	0	0	0	0	0	0	0	0	0	0	0
6310	58	21	0	0	0	0	0	0	0	0	0	0	0	0
6310	59	21	0.01	0	0	0	0	0	0	0	0	0	0	0
6310	60	21	0.22	0	0	0	0.055	0.275	0.55	0	0	0	0	0
6310	61	21	0.108	0	0	0	0.012	0	0	0	0	0	0	0
6310	62	17	0.059	0	0	0	0	0.001	0	0	0	0	0	0
6310	63	15	0.44	0	0	0.05	0.005	0.005	0	0	0	0	0	0
6310	64	15	0.115	0.001	0	0.002	0.002	0	0	0	0	0	0	0
6310	65	14	0.332	0	0	0.002	0.048	0.004	0	0	0	0	0.006	0.008
6310	66	14	0.019	0	0	0	0.285	0.076	0	0	0	0	0	0
6310	67	13	0.01	0	0	0	0	0	0	0	0	0	0	0
6310	68	14	0.135	0.008	0	0.013	0	0.013	0.039	0.013	0	0.026	0.013	0
6310	69	13	0	0	0	0.033	0.016	0	0	0	0	0	0	0
6310	70	13	0	0	0	0	0	0	0	0	0	0	0	0
6310	71	12	0.01	0	0	0	0	0	0	0	0	0	0	0
6310	72	11	0.022	0	0	0	1.048	0.011	0	0	0	0	0	0
6310	73	10	0.002	0	0	0	0.247	0	0	0	0	0	0	0
6310	74	10	0.044	0	0	0	0.176	0	0	0	0	0	0	0
6310	75	10	0.093	0	0	0	0.097	0	0	0	0	0	0	0
6310	76	9	0.007	0	0	0	0.022	0	0	0	0	0	0	0
6310	78	9	0.039	0	0	0	0.351	0	0	0	0	0	0	0
6310	80	9	0.007	0.012	0	0	0	0	0.03	0	0	0	0	0
6310	81	9	0.107	0	0	0	0	0	0.301	0.021	0	0	0	0
6310	82	8	0.052	0	0	0	0	0	0.14	0	0	0	0	0.157
6313	1	17	0	0	0	0	0	0.005	0.005	0	0	0	0	0
6313	2	25	0.037	0	0	0.007	0	0	0	0	0	0	0	0.005
6313	3	18	0.002	0	0	0	0.002	0.014	0	0.052	0	0.014	0.014	0.002
6313	4	14	0.003	0	0	0	0.004	0.001	0	0	0	0.001	0	0
6313	5	23	0.042	0	0	0.008	0.076	0.025	0.017	0	0	0	0	0.001
6313	6	17	0.013	0	0	0	0.013	0	0.032	0.009	0	0.016	0	0.046
6313	7	17	0.003	0.07	0	0.017	0.017	0.021	0.122	0	0	0.035	0	0.062
6313	10	44	0	0	0	0	0	0	0	0	0	0	0	0
6313	11	21	0.18	0	0.06	0	0	0	0	0	0	0	0	0
6313	12	21	0	0.009	0	0.014	0.005	0	0.202	0	0	0	0	0
6313	13	19	0.005	0	0.004	0	0	0	0	0	0	0	0	0
6313	14	18	0	0	0.013	0	0.016	0	0	0	0	0	0	0
6313	15	19	0	0	0	0.01	0	0	0	0	0	0	0	0
6313	16	37	0	0	0.048	0	0.012	0	0	0	0	0	0	0
6313	17	57	0.274	0	0.095	0	0.011	0	0	0	0	0	0	0
6313	18	44	0	0	0	0	0	0	0	0	0	0	0	0
6313	19	38	0.082	0	0.007	0	0	0	0	0	0	0	0	0
6313	20	18	0.005	0	0.005	0	0	0	0	0	0	0	0	0.001
6313	21	25	0.021	0	0.043	0.003	0	0.003	0	0	0	0	0	0
6313	22	9	0	0	0	0	0.009	0	0.015	0	0	0.006	0	0
6313	23	21	0.498	0	0.054	0	0.03	0.012	0	0	0	0	0	0.006
6313	24	19	0.007	0	0	0	0	0	0	0	0	0	0	0
6313	25	17	0.022	0	0.037	0	0	0.007	0.075	0.007	0	0	0	0
6313	26	17	0	0	0.01	0	0	0	0	0	0	0	0	0
6313	27	14	0.012	0	0	0	0.018	0	0	0	0	0	0	0.001
6313	28	18	0.005	0	0	0	0	0	0	0	0	0	0	0
6313	29	14	0	0.014	0	0.026	0.028	0	0	0	0	0	0	0.002
6313	30	17	0.008	0	0	0	0.005	0.009	0	0	0	0	0	0
6313	31	20	0.03	0	0	0	0	0	0	0	0	0	0	0
6313	32	20	0.186	0.002	0	0	0.002	0	0	0	0	0	0	0
6313	33	21	0.08	0	0	0.02	0	0	0	0	0	0	0	0
6313	35	22	0.009	0	0	0	0	0	0	0	0	0	0	0
6313	36	16	0.009	0	0	0	0	0	0	0	0	0	0	0
6313	37	18	0	0	0	0	0	0	0	0	0	0	0	0.011
6313	38	18	0.007	0	0	0	0.002	0	0	0	0	0	0	0
6313	39	22	0	0	0	0	0	0	0	0	0	0	0	0
6313	41	22	0.022	0	0	0	0.027	0	0	0	0	0	0	0
6313	42	23	0.17	0	0	0	0	0	0	0	0	0	0	0
6313	43	22	0	0	0	0	0	0	0	0	0	0	0	0
6313	44	21	0.022	0.001	0	0	0.006	0	0	0	0	0	0	0
6313	45	16	0.025	0.003	0	0.024	0.016	0.01	0.002	0	0	0	0	0

APPENDIX 3A. (cont.)

CRUISE	STN	D(m)	OLIG	HIR	PONT	ASEL	CHIR	PIS	SPH	AMN	BYTH	V.S	V.T	OTH
6313	46	18	0	0.001	0	0.002	0.001	0	0	0	0	0	0	0
6313	47	17	0.019	0.001	0	0	0.01	0	0	0	0	0	0	0
6313	50	25	0.02	0	0	0	0	0	0	0	0	0	0	0
6313	51	23	0.02	0	0	0	0	0	0	0	0	0	0	0
6313	52	22	0	0	0	0	0.02	0	0	0	0	0	0	0
6313	53	12	0	0.01	0	0	0	0	0	0	0	0	0	0
6313	54	17	0.024	0.025	0	0	0.001	0	0	0	0	0	0	0
6313	55	16	0.099	0	0	0	0.054	0	0	0.018	0	0	0.009	0
6313	56	20	0.055	0	0	0	0.045	0	0	0	0	0	0	0
6313	57	21	0	0	0	0	0.15	0	0	0	0	0	0	0
6313	58	22	0	0	0	0	0	0	0	0	0	0	0	0
6313	59	22	0	0	0	0	0.1	0	0	0	0	0	0	0
6313	60	23	0	0	0	0	0.2	0	0	0	0	0	0	0
6313	61	23	0	0	0	0	0	0	0	0	0	0	0	0
6313	62	20	0.034	0	0	0	0.246	0	0	0	0	0	0	0
6313	63	27	0.042	0	0	0	0.084	0.014	0	0	0	0	0	0
6313	64	13	0.314	0	0	0	0.044	0.011	0	0	0	0	0	0
6313	65	16	0.275	0.016	0	0.005	0.11	0.126	0	0	0	0.016	0	0
6313	66	14	0.063	0	0	0.002	0.095	0.028	0	0	0	0	0	0.002
6313	67	13	0.031	0	0	0	0.037	0.001	0	0	0	0	0	0
6313	68	12	0.041	0.006	0	0	0.04	0.005	0	0	0	0.008	0	0
6313	69	13	0.001	0	0	0	0.135	0.004	0	0	0	0.009	0	0
6313	70	13	0	0	0	0	0.1	0	0	0	0	0	0	0
6313	71	12	0.029	0	0	0	0.201	0	0	0	0	0	0	0
6313	72	12	0.059	0	0	0	0.531	0	0	0	0	0	0	0
6313	73	11	0	0	0	0	0	0	0	0	0	0	0	0
6313	74	11	0	0	0	0	0.225	0	0	0	0	0	0.025	0
6313	75	10	0	0	0	0	0.05	0	0	0	0	0	0	0
6313	76	10	0	0	0	0	0.17	0	0	0	0	0	0	0
6313	80	9	0	0.008	0	0	0.002	0	0	0	0	0	0	0
6313	81	9	0	0	0	0	0	0	0.15	0	0	0	0	0
6313	82	8	0.005	0	0	0	0	0	0	0	0	0	0	0
6316	1	15	0	0	0.025	0	0.01	0	0.01	0	0	0.002	0	0.002
6316	2	24	0.007	0	0.005	0.007	0.063	0.007	0	0	0	0	0	0
6316	3	18	0.002	0	0.02	0	0.015	0	0	0	0	0.01	0	0.002
6316	4	15	0.007	0	0.003	0	0.018	0.001	0	0	0	0	0	0
6316	5	22	0.03	0	0	0	0.02	0	0	0	0	0	0	0
6316	6	16	0.0435	0.0435	0	0	0.131	0.044	0.131	0	0	0	0	0.479
6316	7	17	0	0.016	0.022	0.009	0.014	0	0.072	0	0	0.005	0	0.041
6316	11	30	0.088	0	0.072	0	0	0	0	0	0	0	0	0
6316	12	14	0	0	0	0	0.02	0	0	0	0	0	0	0
6316	13	18	0	0	0	0.015	0.007	0	0	0	0	0.03	0	0.097
6316	14	20	0.036	0	0	0	0.004	0	0	0	0	0	0	0
6316	15	18	0	0	0	0	0	0	0	0	0	0	0	0
6316	16	38	0.068	0	0.102	0	0	0	0	0	0	0	0	0
6316	17	44	0.18	0	0.01	0	0.01	0	0	0	0	0	0	0
6316	18	44	0.005	0	0	0	0	0	0	0	0	0	0	0
6316	19	35	0.15	0	0.15	0	0	0	0	0	0	0	0	0
6316	20	16	0.001	0	0	0	0	0.004	0	0	0	0.003	0.002	0
6316	21	24	0.01	0	0.026	0	0.004	0	0	0	0	0	0	0
6316	22	9	0	0	0	0	0.02	0	0	0	0	0.06	0	0.12
6316	23	22	0.056	0.019	0.005	0	0	0	0	0	0	0	0	0
6316	25	14	0	0	0.054	0	0	0.027	0.027	0.027	0	0.045	0	0
6316	26	15	0	0	0.032	0	0.005	0.002	0	0.005	0	0.005	0	0
6316	27	16	0	0	0	0	0	0	0	0	0	0	0	0
6316	28	17	0	0.01	0	0	0	0	0	0	0	0	0	0
6316	29	15	0.004	0.004	0	0	0	0	0	0	0	0	0	0.001
6316	30	17	0.001	0	0	0.067	0	0.001	0	0	0	0	0	0.079
6316	32	20	0.178	0	0	0.006	0.01	0	0	0.006	0	0	0	0
6316	33	20	0.05	0.004	0	0.018	0.007	0	0.004	0	0	0.007	0	0
6316	34	22	0.085	0	0	0.004	0.006	0.006	0.007	0	0	0.012	0	0
6316	35	21	0.047	0	0	0	0.003	0	0	0	0	0	0	0
6316	36	15	0.005	0	0	0	0.004	0	0	0	0	0	0	0
6316	37	19	0	0	0	0	0	0.009	0	0	0	0	0	0
6316	38	18	0.003	0	0	0	0	0	0	0	0	0.002	0	0
6316	39	23	0	0	0	0	0	0	0	0	0	0	0	0

APPENDIX 3A. (cont.)

CRUISE	STN	D(m)	OLIG	HIR	PONT	ASEL	CHIR	PIS	SPH	AMN	BYTH	V.S	V.T	OTH
6316	40	23	0.042	0	0	0	0.028	0	0	0	0	0	0	0
6316	41	22	0.019	0	0	0	0.01	0	0	0	0	0	0	0
6316	42	23	0.006	0	0	0	0	0	0.004	0	0	0	0	0
6316	44	20	0	0	0	0	0	0	0	0	0	0	0	0
6316	45	13	0.014	0	0	0.02	0.004	0.024	0.014	0	0	0	0	0.003
6316	47	18	0.05	0	0	0	0.05	0	0	0	0	0	0	0
6316	48	23	0.036	0	0	0	0.084	0	0	0	0	0	0	0
6316	49	23	0.01	0	0	0	0	0	0	0	0	0	0	0
6316	52	21	0.009	0	0	0	0	0	0	0	0	0	0	0
6316	53	14	0.005	0	0	0	0.023	0.002	0	0	0	0	0	0
6316	54	15	0.01	0	0	0	0	0	0	0	0	0	0	0
6316	55	16	0.12	0	0	0.003	0.162	0.009	0	0.006	0	0	0	0
6316	56	18	0.008	0	0	0	0	0	0	0	0	0	0	0
6316	57	22	0.02	0	0	0	0.08	0	0	0	0	0	0	0
6316	58	21	0.006	0	0	0	0.123	0	0	0	0	0	0	0
6316	59	22	0.005	0	0	0	0.104	0	0	0	0	0	0	0
6316	60	21	0.038	0	0	0	0.071	0	0	0	0	0	0	0
6316	61	21	0.01	0	0	0	0	0	0	0	0	0	0	0
6316	62	20	0.035	0	0	0	0.098	0.007	0	0	0	0	0	0
6316	63	17	0.169	0	0	0	0.039	0.052	0	0	0	0	0	0
6316	64	16	0.9	0	0	0	0.375	0.225	0	0	0	0	0	0
6316	65	14	0.141	0	0	0	0.176	0.003	0	0	0	0	0	0
6316	66	13	0.028	0	0	0	0.16	0.002	0	0	0	0	0	0
6316	67	16	0.095	0	0	0	0.047	0.013	0	0	0	0.028	0.006	0
6316	68	12	0.075	0.002	0	0	0.076	0	0.008	0.003	0	0.005	0	0
6316	69	11	0.078	0	0	0	0.042	0	0	0	0	0	0	0
6316	70	13	0	0	0	0	0.05	0	0	0	0	0	0	0
6316	71	14	0	0	0	0	0.05	0	0	0	0	0	0	0
6316	72	12	0.024	0	0	0	0.198	0	0	0	0	0	0	0
6316	73	11	0.018	0	0	0	0.072	0	0	0	0	0	0	0
6316	74	11	0.316	0	0	0	0.434	0	0	0	0	0	0	0.039
6316	75	10	0	0	0	0.18	0	0	0	0	0	0	0	0
6316	76	9	0	0	0	0	0	0	0	0	0	0	0	0
6316	78	10	0	0	0	0	0.76	0	0	0	0	0	0	0
6316	80	9	0	0.16	0	0	0	0	0.04	0	0	0	0	0
6316	81	9	0.046	0	0	0	0.058	0	0.423	0	0	0	0.017	0.035
6316	82	8	0.028	0.072	0	0	0	0.004	0.012	0	0	0	0.004	0.284
6318	1	16	0	0	0.018	0	0.014	0	0.048	0.007	0	0.018	0	0.014
6318	2	24	0.027	0.022	0	0.011	0.027	0.004	0	0	0	0	0	0
6318	3	18	0.046	0.068	0	0	0.006	0.03	0	0.019	0	0.038	0.023	0.099
6318	4	15	0	0.01	0	0	0	0	0	0	0	0	0	0
6318	5	23	0.024	0	0	0	0.016	0	0	0	0	0	0	0
6318	6	17	0.017	0.016	0	0.008	0.019	0	0.036	0	0	0	0	0.034
6318	7	19	0	0	0	0	0.012	0	0	0	0	0.004	0	0.032
6318	9	42	0.025	0	0.025	0	0	0	0	0	0	0	0	0
6318	10	41	0.002	0	0	0	0	0	0	0	0	0	0	0
6318	11	31	0.2	0	0.275	0	0	0	0.025	0	0	0	0	0
6318	12	20	0.009	0.03	0	0.036	0.03	0.018	0.06	0	0	0.033	0.015	0.069
6318	13	19	0	0.025	0.006	0	0.019	0	0	0	0	0	0	0
6318	14	19	0.001	0	0.026	0	0.002	0	0	0	0	0	0	0
6318	16	36	0.225	0	0.275	0	0	0	0	0	0	0	0	0
6318	17	56	0.082	0	0.067	0	0	0	0	0	0	0	0	0
6318	18	44	0	0	0	0	0	0	0	0	0	0	0	0
6318	19	37	0.175	0	0.175	0	0	0	0	0	0	0	0	0
6318	20	19	0.031	0	0.025	0	0.051	0.007	0.014	0	0	0.019	0	0.024
6318	21	26	0.016	0	0.045	0	0.013	0	0	0	0	0.015	0	0
6318	22	10	0	0	0	0	0.01	0	0	0	0	0	0	0.09
6318	23	23	0.63	0.11	0	0.137	0.274	0.205	0	0	0	0	0	0.014
6318	24	17	0.075	0.018	0	0	0.001	0	0	0	0	0	0	0.005
6318	25	14	0.002	0	0.051	0	0	0.004	0	0	0	0	0	0.003
6318	26	19	0.012	0	0.016	0	0.006	0.002	0	0	0	0	0	0.004
6318	27	16	0.039	0	0.017	0	0	0	0.051	0.051	0	0.012	0	0
6318	28	17	0.007	0.035	0	0.017	0.01	0	0	0	0	0	0	0
6318	29	15	0.016	0	0	0	0.024	0	0	0	0	0	0	0
6318	30	18	0.068	0.031	0	0	0.01	0.002	0.059	0	0	0	0	0

APPENDIX 3A. (cont.)

CRUISE	STN	D(m)	OLIG	HIR	PONT	ASEL	CHIR	PIS	SPH	AMN	BYTH	V.S	V.T	OTH
6318	31	20	0	0	0	0	0	0	0	0	0	0	0	0
6318	32	21	0.025	0	0	0.025	0.04	0	0	0	0	0	0	0
6318	33	22	0.092	0	0	0.018	0.051	0	0.069	0	0	0	0	0
6318	34	21	0.189	0.016	0	0.032	0.032	0	0	0	0	0	0	0
6318	35	21	0.093	0	0	0.005	0.011	0	0	0	0	0	0	0
6318	36	17	0.067	0	0	0.045	0.054	0	0	0	0	0.045	0	0.137
6318	37	18	0	0	0	0	0	0	0	0	0	0	0	0
6318	38	18	0	0	0	0	0	0	0	0	0	0	0	0
6318	39	21	0	0	0	0	0.2	0	0	0	0	0	0	0
6318	40	22	0	0	0	0	0	0	0.16	0	0	0	0	0
6318	41	23	0.11	0	0	0	0.09	0	0	0	0	0	0	0
6318	42	22	0	0	0	0	0	0	0	0	0	0	0	0
6318	43	22	0.02	0	0	0	0	0	0	0	0	0	0	0
6318	44	20	0.009	0	0	0	0.081	0	0	0	0	0	0	0
6318	45	11	0.001	0.044	0	0.036	0.08	0	0.008	0	0	0	0	0.022
6318	46	15	0.03	0	0	0.018	0.062	0	0	0.01	0	0	0	0
6318	47	18	0.108	0.012	0	0	0.12	0	0	0	0	0	0	0
6318	48	22	0	0	0	0	0.18	0	0	0	0	0	0	0
6318	49	24	0.009	0	0	0	0.011	0	0	0	0	0	0	0
6318	50	23	0	0	0	0	0	0	0	0	0	0	0	0
6318	51	22	0	0	0	0	0	0	0	0	0	0	0	0
6318	52	20	0.01	0	0	0	0	0	0	0	0	0	0	0
6318	53	12	0.035	0	0	0	0.015	0	0	0	0	0	0	0
6318	54	15	0.025	0.012	0	0	0.005	0.007	0	0	0	0	0	0
6318	55	16	0.043	0	0	0	0.317	0	0	0	0	0	0	0
6318	56	18	0.009	0	0	0	0	0	0	0	0	0	0	0
6318	57	21	0.02	0	0	0	0.08	0	0	0	0	0	0	0
6318	58	21	0.014	0	0	0	0.126	0	0	0	0	0	0	0
6318	59	20	0	0	0	0	0	0	0	0	0	0	0	0
6318	60	21	0.036	0	0	0	0.142	0.002	0	0	0	0	0	0
6318	61	21	0.051	0	0	0	0.119	0	0	0	0	0	0	0
6318	62	17	0.24	0	0	0	0.08	0.078	0	0	0	0	0	0.002
6318	63	15	0.222	0	0	0.012	0.089	0.066	0	0	0	0	0	0
6318	64	15	0.22	0	0	0.044	0.11	0.039	0	0.026	0	0	0	0
6318	65	13	0.288	0.036	0	0.036	0.144	0.108	0	0	0	0.072	0.036	0
6318	66	13	0.057	0	0	0.014	0.115	0.025	0	0	0	0	0.018	0
6318	67	14	0.031	0	0	0	0.031	0	0	0	0	0	0.007	0
6318	68	13	0.096	0.029	0	0.032	0.087	0.014	0	0.006	0	0	0.012	0.015
6318	69	11	0	0.02	0	0	0	0	0	0	0	0	0	0
6318	70	15	0.04	0.01	0	0	0	0	0	0	0	0	0	0
6318	71	15	0.032	0.026	0	0	0.071	0	0	0	0	0	0	0
6318	72	13	0.032	0	0	0	0.498	0	0	0	0	0	0	0
6318	73	10	0	0	0	0	0.009	0	0	0	0	0	0	0
6318	74	10	0.21	0.021	0	0	0.189	0	0	0	0	0	0	0
6318	75	10	0	0	0	0	0.3	0	0	0	0	0	0	0
6318	76	9	0.09	0	0	0	0.06	0	0	0	0	0	0	0
6318	77	7	0.069	0	0	0	0.149	0.011	0	0	0	0	0	0
6318	78	9	0.08	0	0	0	0.12	0	0	0	0	0	0	0
6318	79	8	0	0	0	0	0.09	0	0	0	0	0	0	0
6318	80	8	0.013	0	0	0	0.039	0	0.208	0	0	0	0	0
6318	81	9	0.042	0	0	0	0.021	0	1.47	0.042	0	0	0.021	0.504
6318	82	8	0	0	0	0	0	0	0.02	0	0	0	0	0

APPENDIX 3B. Benthic biomass (vol. wet ml.sample^{-1}) of the major invertebrate groups in Lake Erie during the 1964 cruises of the GLI.

CRUISE	STN	D(m)	OLIG	HIR	PONT	ASEL	CHIR	PIS	SPH	AMN	BYTH	V.S	V.T	OTH
6401	15	18	0.017	0.012	0.007	0	0.012	0	0	0	0	0	0	0
6401	16	39	0.296	0	0.5	0	0.004	0	0	0	0	0	0	0
6401	17	58	0.346	0	0.1	0	0.004	0	0	0	0	0	0	0
6401	18	40	0.028	0	0.008	0	0	0	0	0	0	0	0	0
6401	19	37	0.073	0	0.416	0	0	0	0	0	0	0	0	0
6401	20	16	0.003	0	0.025	0	0.006	0.001	0	0	0	0	0	0.015
6401	55	15	0.06	0	0	0	0.03	0.01	0	0	0	0	0	0
6401	56	19	0.034	0	0	0	0.136	0	0	0	0	0	0	0
6401	57	18	0.04	0	0	0	0	0.01	0	0	0	0	0	0
6401	58	22	0.028	0	0	0	0.042	0	0	0	0	0	0	0
6401	59	19	0	0	0	0	0	0	0	0	0	0	0	0
6401	60	22	0.02	0	0	0	0.26	0	0.12	0	0	0	0	0
6401	61	21	0.003	0	0	0	0	0	0	0	0	0	0	0
6401	62	21	0.059	0	0	0	0.068	0.042	0	0	0	0	0	0
6401	78	8	0	0	0	0	0.2	0	0	0	0	0	0	0
6401	81	9	0.063	0	0	0	0.007	0.007	0.08	0	0	0	0	0.192
6404	15	19	0.005	0	0	0	0	0	0	0	0	0	0	0
6404	16	39	0.104	0	0.085	0	0	0	0	0	0	0	0	0
6404	17	57	1.19	0	0	0	0.012	0	0	0	0	0	0	0
6404	18	45	0.022	0	0.018	0	0	0	0	0	0	0	0	0
6404	19	40	0.02	0	0	0	0	0	0	0	0	0	0	0
6404	20	18	0.048	0	0.006	0	0.006	0	0	0	0	0	0	0
6404	55	17	0.2	0	0	0	0.024	0.025	0	0	0	0	0	0.001
6404	56	19	0.006	0	0	0	0	0	0	0	0	0	0	0
6404	57	20	0.005	0	0	0	0	0	0	0	0	0	0	0
6404	58	21	0	0	0	0	0.05	0	0	0	0	0	0	0
6404	59	22	0	0	0	0	0	0	0	0	0	0	0	0
6404	60	21	0.01	0	0	0	0	0	0	0	0	0	0	0
6404	61	21	0.006	0	0	0	0	0	0	0	0	0	0	0
6404	62	20	0	0	0	0	0	0	0	0	0	0	0	0
6404	78	9	0	0	0	0	0.23	0	0	0	0	0	0	0
6404	81	8	0.042	0.014	0	0	0	0	0.084	0	0	0	0	0
6404	83	5	0.162	0.025	0	0	0	0	0.062	0	0	0	0	0
6406	15	20	0.02	0	0.01	0	0.07	0	0	0	0	0	0	0
6406	16	39	0.27	0	0.18	0	0	0	0	0	0	0	0	0
6406	17	56	0.657	0	0.073	0	0	0	0	0	0	0	0	0
6406	18	45	0.037	0	0.012	0	0	0	0	0	0	0	0	0
6406	19	49	0.15	0	0.15	0	0	0	0	0	0	0	0	0
6406	20	23	0.022	0	0	0	0.005	0.022	0	0	0	0	0	0
6406	55	16	0.07	0	0	0	0	0	0	0	0	0	0	0
6406	56	19	0.01	0	0	0	0	0	0	0	0	0	0	0
6406	57	21	0.013	0	0	0	0	0.016	0	0	0	0	0	0
6406	58	22	0.01	0	0	0	0	0.01	0	0	0	0	0	0
6406	59	22	0.006	0	0	0	0.004	0	0	0	0	0	0	0
6406	60	22	0.05	0	0	0	0	0	0.05	0	0	0	0	0
6406	61	23	0.01	0	0	0	0	0	0	0	0	0	0	0
6406	62	20	0.016	0	0	0	0.049	0.044	0	0	0	0	0	0
6406	81	9	0.157	0	0	0	0.042	0	0.035	0	0	0	0.021	0.094
6406	83	6	0.7	0.03	0	0	0	0	0.27	0	0	0	0	0

APPENDIX 3B.(cont.)

CRUISE	STN	D(m)	OLIG	HIR	PONT	ASEL	CHIR	PIS	SPH	AMN	BYTH	V.S	V.T	OTH
6407	83	5	0.2 ?	0.1	0	0	0	0	0	0	0	0	0	0
6407	80	7	0.001	0	0	0	0.069	0	0	0	0	0	0	0
6407	78	8	0	0	0	0	0	0	0	0	0	0	0	0
6407	61	20	0.069	0	0	0	0	0.001	0	0	0	0	0	0
6407	60	21	0.016	0	0	0	0.064	0	0	0	0	0	0	0
6407	59	21	0	0	0	0	0	0	0	0	0	0	0	0
6407	58	21	0.01	0	0	0	0	0	0	0	0	0	0	0
6407	56	18	0.005	0	0	0	0	0	0	0	0	0	0	0
6407	55	15	0.04	0	0	0	0	0.01	0	0	0	0	0	0
6407	54	14	0.056	0	0	0.003	0	0.003	0	0	0	0	0.007	0
6407	20	17	0.043	0.001	0.03	0	0.015	0.015	0	0	0	0	0	0.045
6407	19	38	0.279	0	0.092	0	0	0	0	0	0	0	0	0
6407	18	46	0.01	0	0.02	0	0	0	0	0	0	0	0	0
6407	17	53	0.691	0	0.002	0	0	0	0	0	0	0	0	0.007
6407	16	34	0.254	0	0.013	0	0	0	0	0	0	0	0	0.003
6407	15	16	0.002	0.168	0	0	0	0	0	0	0	0	0	0
6407	6	16	0.003	0.014	0	0	0	0.003	0	0	0	0.014	0	0.136
6407	2	22	0.036	0	0	0.004	0.045	0.004	0	0	0	0	0	0
6407	1	14	0.03	0	0.02	0	0.05	0.02	0.08	0	0	0	0	0
6409	83	6	0.147	0.029	0	0	0.005	0	0.25	0	0	0	0	0.059
6409	81	9	0.06	0.008	0	0	0	0	0.032	0	0	0	0	0
6409	78	9	0.063	0.027	0	0	0	0	0	0	0	0	0	0
6410	15	20	0.016	0.032	0.032	0	0.098	0	0	0.01	0	0	0	0.012
6410	16	40	0.22	0	0.18	0	0	0	0	0	0	0	0	0
6410	18	47	0.044	0	0.005	0	0	0	0	0	0	0	0	0.001
6410	19	40	0.122	0	0.122	0	0	0	0	0	0	0	0	0.005
6410	20	20	0.114	0.03	0	0.03	0.012	0.045	0.06	0	0	0	0	0.009
6410	55	15	0.03	0	0	0	0.055	0.015	0	0	0	0	0	0
6410	56	19	0.02	0	0	0	0	0	0	0	0	0	0	0
6410	57	22	0.035	0	0	0	0.015	0	0	0	0	0	0	0
6410	58	21	0.034	0	0	0	0.006	0	0	0	0	0	0	0
6410	59	22	0.005	0	0	0	0	0	0	0	0	0	0	0
6410	60	22	0	0	0	0	0.05	0	0	0	0	0	0	0
6410	61	21	0.005	0	0	0	0	0	0	0	0	0	0	0
6410	62	20	0.05	0	0	0	0.045	0.005	0	0	0	0	0	0
6410	78	9	0.03	0	0	0	0.09	0	0	0	0	0	0	0
6410	81	8	0.063	0.063	0	0	0	0.01	0	0	0	0	0.01	0.063
6410	83	6	0.034	0.221	0	0	0.007	0	0	0.01	0	0	0	0.068
6411	53	12	0.001	0	0	0	0	0	0	0	0	0	0	0
6411	51	25	0.001	0	0	0	0.099	0	0	0	0	0	0	0
6411	50	25	0.002	0	0	0	0.168	0	0	0	0	0	0	0
6411	49	25	0.05	0	0	0	0.2	0	0	0	0	0	0	0
6411	48	23	0.053	0	0	0	0.594	0	0	0	0	0.013	0	0
6411	47	18	0.156	0.03	0	0	0.186	0	0	0	0	0.008	0	0
6411	20	19	0.31	0.125	0	0.03	0.01	0.005	0	0	0	0	0	0.02
6411	19	39	0.225	0	0.069	0	0.006	0	0	0	0	0	0	0
6411	18	47	0.025	0.008	0.017	0	0	0	0	0	0	0	0	0
6411	17	59	1.065	0	0.105	0	0	0	0	0	0	0	0	0.001
6411	16	40	1.576	0	0.016	0	0	0	0	0	0	0	0	0.008
6411	15	21	0.026	0	0.117	0	0.117	0	0	0	0	0	0	0

APPENDIX 3C. Benthic biomass (vol. Wet ml. sample^{-1} of the major invertebrate groups in Lake Erie, during the 1965 G.L.I. cruises.

CRUISE	STN	D(m)	OLIG	HIR	PONT	ASEL	CHIR	PIS	SPH	AMN	BYTH	V.S	V.T	OTH
6501	2	22	0.045	0.012	0	0	0.095	0.001	0.018	0	0	0	0.009	0
6501	12	21	0	0	0	0.163	0.012	0.002	0	0	0	0	0	0.163
6501	13	18	0.006	0.02	0	0	0.112	0.006	0	0	0	0	0	0.104
6501	11	33	0.525	0.014	0.161	0	0	0	0	0	0	0	0	0
6501	10	32	0.731	0	0.038	0	0	0	0	0	0	0	0	0
6501	17	55	0.72	0	0.08	0	0	0	0	0	0	0	0	0
6501	18	48	0.13	0	0.13	0	0	0	0	0	0	0	0	0
6501	21	26	0.011	0	0.17	0.012	0.006	0.001	0	0	0	0	0	0
6501	23	23	0.18	0.032	0.08	0	0.032	0.04	0.032	0	0	0	0	0
6501	24	19	0.016	0	0	0	0.004	0	0	0	0	0	0	0
6501	25	14	0.021	0	0.252	0	0	0.013	0.025	0.013	0	0.013	0	0.084
6501	26	15	0.03	0	0.03	0	0.006	0.054	0.12	0.006	0	0.009	0	0.045
6501	27	14	0.028	0	0.036	0	0.3	0.02	0	0.004	0	0	0	0.012
6501	27	14	0.056	0	0.017	0	0.308	0.011	0.045	0.034	0	0.022	0	0.067
6501	29	15	0.002	0	0	0	0.018	0	0	0	0	0	0	0
6501	30	18	0.045	0	0	0	0.005	0	0	0	0	0	0	0
6501	31	20	0.05	0.02	0	0	0.02	0.002	0	0	0	0	0	0.008
6501	32	21	0.315	0.02	0	0.075	0.075	0.01	0	0	0	0	0	0.005
6501	33	20	0.009	0	0	0	0	0	0	0	0	0	0	0
6501	34	21	0.027	0	0	0.012	0.01	0	0	0	0	0	0	0
6501	35	21	0.195	0	0	0.021	0.026	0	0.01	0	0	0	0	0.008
6501	36	17	0.133	0	0	0.038	0.095	0	0.038	0.015	0	0.023	0	0.038
6501	37	18	0.003	0.006	0	0	0	0	0	0	0	0	0	0
6501	38	18	0.016	0	0	0	0.004	0	0	0	0	0	0	0
6501	39	21	0.015	0	0	0	0.045	0	0	0	0	0	0	0
6501	40	21	0.28	0	0	0	0.32	0	0.2	0	0	0	0	0
6501	41	22	0.099	0	0	0	0.077	0	0.044	0	0	0	0	0
6501	42	22	0.048	0	0	0	0.11	0	0	0	0	0	0	0.002
6501	43	21	0.02	0	0	0	0	0	0	0	0	0	0	0
6501	44	20	0	0	0	0	0	0	0	0	0	0	0	0
6501	45	14	0.064	0	0	0	0.18	0.132	0.008	0.016	0	0	0	0
6501	46	16	0.001	0	0	0.01	0.005	0	0	0.004	0	0	0	0
6501	47	15	0.262	0.052	0	0	0.367	0.037	0	0	0	0	0	0.03
6501	48	22	0.053	0	0	0	0.087	0	0	0	0	0	0	0
6501	49	24	0.025	0	0	0	0.025	0	0	0	0	0	0	0
6501	50	23	0	0	0	0	0.118	0.002	0	0	0	0	0	0
6501	51	23	0.017	0	0	0	0.332	0	0	0	0	0	0	0
6501	52	20	0.066	0	0	0	0.054	0	0	0	0	0	0	0
6501	53	10	0.01	0	0	0	0	0	0	0	0	0	0	0
6501	54	14	0.005	0	0	0	0	0	0	0	0	0	0	0
6501	55	15	0.025	0	0	0	0.014	0.01	0	0	0	0	0	0.001
6501	56	18	0.022	0	0	0	0.027	0	0	0	0	0	0	0
6501	57	20	0.017	0	0	0	0.153	0	0	0	0	0	0	0
6501	58	21	0.025	0	0	0	0.01	0	0.065	0	0	0	0	0
6501	59	21	0	0	0	0	0.097	0.007	0.045	0	0	0	0	0
6501	60	21	0.007	0	0	0	0.142	0	0	0	0	0	0	0
6501	61	20	0.01	0	0	0	0	0	0.03	0	0	0	0	0
6501	62	19	0.031	0	0	0	0.038	0	0	0	0	0	0	0
6501	63	17	0.1	0	0	0	0.125	0.022	0	0	0	0	0	0.002
6501	64	15	0.117	0.003	0	0	0.18	0	0	0	0	0	0	0
6501	65	12	0.172	0.008	0	0.06	0.036	0.06	0	0.012	0	0.02	0.028	0.016
6501	66	12	0.212	0.051	0	0.051	0.425	0.051	0	0	0	0.025	0.025	0.008
6501	67	12	0	0	0	0	0	0	0	0	0	0	0	0
6501	68	10	0.056	0.001	0	0	0.014	0.027	0	0.014	0	0.028	0	0
6501	69	12	0	0	0	0	0	0	0	0	0	0	0	0
6501	70	12	0.072	0	0	0	0.168	0	0	0	0	0	0	0
6501	71	12	0.03	0	0	0	0.09	0	0	0	0	0	0	0
6501	72	10	0.126	0.014	0	0	0.455	0	0	0	0	0	0.017	0.087
6501	73	9	0.02	0	0	0	0.03	0	0	0	0	0	0	0
6501	74	7	0.032	0	0	0	0.017	0	0	0	0	0	0	0
6501	75	8	0.135	0	0	0	0.015	0	0	0	0	0	0	0
6501	76	8	0.006	0	0	0	0	0	0	0	0	0	0	0
6501	78	8	0.01	0	0	0	0.019	0	0	0	0	0	0	0
6501	80	8	0	0	0	0	0.01	0	0	0	0	0	0	0
6501	83	5	0.02	0.012	0	0	0	0.012	0	0	0	0	0	0.005
6501	82	6	0.117	0.039	0	0	0.019	0.039	0.097	0	0	0	0	0.078

APPENDIX 3C. (cont.)

CRUISE	STN	D(m)	OLIG	HIR	PONT	ASEL	CHIR	PIS	SPH	AMN	BYTH	V.S	V.T	OTH
6502	22	9	0	0	0	0	0	0	0	0	0	0	0	0
6502	21	27	0.097	0	0.019	0	0.03	0.003	0	0	0	0	0	0
6502	20	17	0	0	0	0	0	0	0	0	0	0	0	0
650	19	38	0.123	0	0.053	0	0.013	0	0	0	0	0	0	0
650	18	44	0.465	0	0.465	0	0.009	0	0	0	0	0	0	0
6502	17	56	0.236	0	0.16	0	0	0	0	0	0	0	0	0.01
6502	16	38	0.2	0	0.2	0	0	0	0	0	0	0	0	0.004
6502	15	19	0.02	0.064	0	0.008	0.064	0	0.16	0	0	0	0	0
6502	12	20	0.031	0.006	0	0.013	0.065	0.006	0	0	0	0	0	0.084
6502	11	31	0.13	0	0.06	0	0.01	0	0	0	0	0	0	0.007
6502	10	45	0.005	0	0.005	0	0	0	0	0	0	0	0	0
6502	9	43	0.004	0	0.002	0	0.001	0.002	0	0	0	0	0	0
6502	8	23	0	0	0	0	0	0	0	0	0	0	0	0
6502	7	19	0.004	0.009	0	0	0.068	0.002	0	0	0	0.015	0.015	0.236
6502	6	18	0.35	0.035	0	0.084	0.154	0.056	0	0	0	0	0.017	0.003
6502	5	24	0.068	0	0	0	0.03	0.002	0	0	0	0	0	0
6502	4	15	0.01	0	0	0	0	0	0	0	0	0	0	0
6502	3	18	0.04	0	0	0	0.029	0.016	0.048	0	0	0.013	0.006	0.008
6502	2	24	0.006	0	0	0	0.06	0.016	0	0	0	0.008	0	0
6502	23	23	0.55	0.027	0.022	0.143	0.088	0.22	0.044	0	0	0	0	0.011
6502	24	19	0	0	0	0	0.01	0	0	0	0	0	0	0
6502	25	16	0.005	0	0.005	0	0	0.015	0.015	0.002	0	0	0	0.007
6502	26	16	0.003	0	0.017	0	0.003	0.015	0.007	0.003	0	0	0	0
6502	27	16	0.006	0	0	0	0.003	0	0	0	0	0	0	0
6502	29	17	0	0	0	0	0	0	0	0	0	0	0	0
6502	30	20	0	0	0	0	0	0	0	0	0	0	0	0
6502	31	20	0.037	0	0	0	0.112	0	0	0	0	0	0	0
6502	32	20	0.163	0.038	0	0.011	0.133	0.009	0	0.023	0	0	0	0.002
6502	33	21	0.058	0.003	0	0.027	0.018	0.007	0.038	0	0	0.014	0	0.016
6502	34	22	0.292	0.045	0	0.009	0.058	0	0.045	0	0	0	0	0
6502	35	23	0.005	0	0	0	0.005	0	0	0	0	0	0	0
6502	36	16	0	0	0	0	0	0	0	0	0	0.02	0	0
6502	37	18	0	0	0	0	0	0	0	0	0	0	0	0
6502	38	18	0.009	0	0	0	0.011	0	0	0	0	0	0	0
6502	39	21	0.035	0	0	0.015	0.03	0.02	0	0	0	0	0	0
6502	40	23	0.022	0.005	0	0.011	0.071	0	0	0	0	0	0	0
6502	41	23	0	0	0	0	0.04	0	0	0	0	0	0	0
6502	42	23	0.005	0	0	0	0.032	0.003	0	0	0	0	0	0
6502	44	20	0.03	0	0	0	0.12	0	0	0	0	0	0	0
6502	45	16	0	0	0	0	0	0	0	0	0	0	0	0
6502	46	17	0.009	0	0	0	0.001	0	0	0	0	0	0	0
6502	47	17	0.495	0.121	0	0	0.264	0.066	0.121	0	0	0.027	0	0.005
6502	48	23	0.144	0.001	0	0.019	0.058	0.001	0.007	0	0	0.01	0	0
6502	49	24	0.034	0	0	0	0.144	0	0	0	0	0	0	0.002
6502	50	25	0.01	0	0	0	0.03	0	0	0	0	0	0	0
6502	51	24	0.005	0	0	0	0.005	0	0	0	0	0	0	0
6502	52	21	0	0	0	0	0	0.005	0	0	0	0	0	0
6502	53	13	0	0	0	0	0	0	0	0	0	0	0	0
6502	54	14	0.01	0	0	0	0	0	0	0	0	0	0	0
6502	55	14	0.051	0	0	0	0.009	0	0	0	0	0	0	0
6502	56	19	0.005	0	0	0	0.004	0	0	0	0	0	0	0
6502	57	22	0	0	0	0	0	0	0	0	0	0	0	0
6502	58	21	0.01	0	0	0	0.01	0	0	0	0	0	0	0
6502	61	22	0.192	0.017	0	0	0.052	0.052	0	0	0	0.017	0	0.017
6502	62	21	0.018	0	0	0	0.002	0	0	0	0	0	0	0
6502	63	17	0.12	0	0	0	0.06	0.02	0	0	0	0	0	0
6502	64	15	0.245	0	0	0	0.07	0.035	0	0	0	0	0	0
6502	65	13	0.295	0	0	0.045	0.1	0.045	0	0.005	0	0	0.005	0.002
6502	66	13	0.063	0.004	0	0	0.021	0.004	0.105	0	0	0.013	0	0.21
6502	68	12	0.075	0.015	0	0	0.072	0.015	0	0.007	0.025	0.012	0.027	0.002
6502	69	12	0.005	0.005	0	0	0	0	0	0	0	0	0	0
6502	70	14	0.099	0.003	0	0	0.235	0	0	0	0	0	0	0.003
6502	71	12	0.003	0	0	0	0	0	0	0	0	0	0	0
6502	72	13	0.04	0	0	0	0.12	0	0	0	0	0	0	0

APPENDIX 3C. (cont.)

CRUISE	STN	D(m)	OLIG	HIR	PONT	ASEL	CHIR	PIS	SPH	AMN	BYTH	V.S	V.T	OTH
6503	1	12	0.004	0	0.002	0	0	0.003	0	0	0	0	0	0
6503	2	24	0.1	0.002	0	0	0.052	0.015	0	0	0	0	0	0.002
6503	3	18	0.112	0	0	0	0.091	0.026	0.026	0	0	0	0	0.005
6503	4	15	0.005	0	0	0	0.002	0.002	0	0	0	0	0	0
6503	5	23	0.045	0.008	0	0	0.02	0.01	0	0	0	0	0	0.017
6503	6	18	0	0.004	0	0	0	0	0.106	0	0	0	0	0
6503	7	20	0.017	0	0	0	0.01	0	0	0	0	0.004	0	0.037
6503	9	44	0	0	0	0	0.01	0	0	0	0	0	0	0
6503	10	44	0	0	0	0	0	0	0	0	0	0	0	0
6503	11	33	0.16	0	0.04	0	0	0	0	0	0	0	0	0
6503	12	22	0.148	0.004	0	0	0.04	0.008	0	0	0	0	0	0
6503	14	19	0.002	0	0.01	0	0.064	0	0	0	0	0	0	0.005
6503	15	19	0.017	0	0	0	0.124	0	0	0	0	0	0	0
6503	16	36	0.06	0	0.14	0	0	0	0	0	0	0	0	0
6503	17	57	0.243	0	0.027	0	0	0	0	0	0	0	0	0
6503	18	44	0.01	0	0	0	0	0	0	0	0	0	0	0
6503	19	45	0.01	0	0	0	0	0	0	0	0	0	0	0
6503	20	19	0.112	0.112	0	0.112	0.154	0.028	0.14	0	0	0	0	0.042
6503	21	26	0.081	0	0.045	0.018	0.018	0.004	0	0	0	0	0	0.015
6503	22	9	0.006	0	0	0	0.002	0.011	0.03	0	0	0	0	0
6503	23	23	0.383	0	0.065	0.065	0.065	0	0.071	0	0	0	0	0
6503	24	17	0	0	0	0	0	0	0	0	0	0	0	0
6503	25	19	0	0	0	0	0	0	0	0	0	0	0	0
6503	26	19	0.006	0	0	0	0.002	0	0	0	0	0	0	0
6503	27	17	0	0	0	0	0.003	0	0	0	0	0	0	0.001
6503	28	18	0.009	0	0	0	0	0	0	0	0	0	0	0.006
6503	29	15	0.005	0	0	0	0	0	0	0	0	0	0	0 5
6503	30	18	0.005	0	0	0	0.005	0	0	0	0	0	0	0.005
6503	31	20	0.112	0	0	0	0.037	0	0	0	0	0	0	0
6503	32	21	0.066	0.017	0	0	0.027	0.003	0	0.014	0	0	0	0.001
6503	33	20	0.015	0	0	0	0	0	0.03	0	0	0	0.014	0
6503	34	23	0.097	0	0	0.022	0.03	0	0.062	0	0	0	0	0
6503	35	22	0.73	0.046	0	0.171	0.171	0.023	0	0	0	0	0	0.022
6503	36	17	0.005	0	0	0	0	0	0	0	0	0	0	0
6503	37	18	0.002	0	0	0	0	0.003	0	0	0	0.005	0	0
6503	38	18	0.005	0.004	0	0	0	0	0	0	0	0.005	0	0
6503	39	22	0	0	0	0	0	0	0	0	0	0	0	0
6503	40	29	0.004	0	0	0	0	0	0.02	0	0	0	0	0
6503	41	24	0.017	0	0	0	0.092	0.004	0	0	0	0	0	0
6503	42	23	0.01	0	0	0	0.032	0	0	0	0	0	0	0
6503	43	23	0.004	0	0	0	0	0	0	0	0	0	0	0
6503	44	22	0	0	0	0	0.006	0	0	0	0	0	0	0
6503	45	15	0	0	0	0	0.02	0	0	0	0	0	0	0
6503	46	19	0	0	0	0	0	0	0	0	0	0	0	0
6503	47	17	0.22	0.11	0	0.005	0	0.005	0	0	0	0	0	0
6503	48	23	0.047	0	0	0	0.06	0.012	0	0	0	0	0	0
6503	49	23	0.157	0	0	0	0.142	0	0	0	0	0	0	0
6503	50	25	0.02	0	0	0	0.052	0	0	0	0	0	0	0
6503	51	24	0.01	0	0	0	0	0.004	0.056	0	0	0	0	0
6503	52	21	0.003	0.006	0	0	0	0	0	0	0	0	0	0
6503	53	13	0.06	0	0	0	0	0	0	0	0	0	0	0
6503	54	16	0.012	0.009	0	0	0.007	0	0	0.001	0	0	0	0
6503	55	16	0.002	0	0	0	0	0	0	0	0	0.007	0	0
6503	56	20	0	0	0	0	0	0	0	0	0	0	0	0
6503	57	22	0	0	0	0	0	0.008	0	0	0	0	0	0
6503	69	13	0	0	0	0	0	0	0	0	0	0	0	0
6503	70	14	0	0	0	0	0	0	0	0	0	0	0	0
6503	71	12	0.05	0	0	0	0	0	0	0	0	0	0	0
6503	72	9	0.005	0	0	0	0	0.01	0	0	0	0	0	0
6503	73	10	0.016	0	0	0	0.004	0	0	0	0	0	0.005	0
6503	74	11	0.1	0	0	0	0	0	0	0	0	0	0	0
6503	75	12	0	0	0	0	0	0	0	0	0	0	0	0
6503	76	9	0	0	0	0	0	0	0	0	0	0	0	0
6503	77	7	0.045	0	0	0	0.135	0	0	0	0	0	0	0
6503	78	9	0.02	0	0	0	0	0	0	0	0	0	0	0
6503	79	6	0	0	0	0	0.01	0	0	0	0	0	0	0
6503	80	10	0.045	0	0	0	0.005	0	0	0	0	0	0	0
6503	81	10	0.15	0	0	0	0	0	0	0	0	0	0	0
6503	82	7	0.22	0.016	0	0	0	0	0.05	0	0	0	0	0
6503	83	10	0.034	0	0	0	0	0.007	0.011	0	0	0	0	0.302
									0.034	0	0	0	0	0.046

APPENDIX 3C. (cont.)

CRUISE	STN	D(m)	OLIG	HIR	PONT	ASEL	CHIR	PIS	SPH	AMN	BYTH	V.S	V.T	OTH
6504	2	11	0.57	0	0	0	0.03	0	0	0	0	0	0	0
6504	82	8	0.286	0.044	0	0	0	0	0.044	0	0	0	0	0.066
6504	80	10	0.01	0	0	0	0	0	0	0	0	0	0	0
6504	76	10	0.01	0	0	0	0	0	0	0	0	0	0	0
6504	75	11	0.18	0	0	0	0	0	0	0	0	0	0	0
6504	73	11	0.15	0	0	0	0	0	0	0	0	0	0	0
6504	72	11	0.052	0	0	0	0.052	0.016	0	0	0	0	0.016	0.012
6504	71	13	0	0	0	0	0	0	0	0	0	0	0	0
6504	70	13	0	0	0	0	0	0	0	0	0	0	0	0
6504	69	12	0.002	0.005	0	0	0	0	0	0	0	0	0	0.002
6504	68	13	0.096	0.02	0	0	0.007	0.04	0.03	0	0	0	0	0.007
6504	83	7	0	0	0	0	0	0	0	0	0	0	0	0
6504	67	14	0.112	0.003	0	0	0.005	0.043	0	0	0	0	0	0.017
6504	66	14	0.176	0.019	0	0	0	0.096	0	0	0	0.01	0.016	0.003
6504	65	14	0.195	0	0	0	0.009	0.075	0	0	0	0	0.006	0.015
6504	64	16	0	0	0	0	0	0	0	0	0	0	0	0
6504	63	17	0.01	0	0	0	0	0	0	0	0	0	0	0
6504	62	19	0.097	0	0	0	0.075	0.075	0	0	0	0	0	0.002
6504	61	21	0.01	0	0	0	0	0	0	0	0	0	0	0
6504	60	22	0	0	0	0	0.04	0	0	0	0	0	0	0
6504	59	22	0.02	0	0	0	0	0	0	0	0	0	0	0
6504	58	22	0.01	0	0	0	0	0	0	0	0	0	0	0
6504	57	21	0	0	0	0	0	0	0	0	0	0	0	0
6504	56	19	0	0	0	0	0	0	0	0	0	0	0	0
6504	55	17	0.379	0	0	0	0.024	0.072	0	0	0	0	0	0.005
6504	54	15	0.266	0	0	0	0.008	0.006	0	0	0	0	0	0
6504	53	12	0.042	0.007	0	0	0	0	0	0	0	0	0	0
6504	52	22	0	0	0	0	0.03	0	0	0	0	0	0	0
6504	51	24	0	0	0	0	0	0	0	0	0	0	0	0
6504	50	25	0.036	0	0	0	0	0.004	0	0	0	0	0	0
6504	49	25	0.017	0	0	0	0	0.003	0	0	0	0	0	0
6504	48	23	0.009	0	0	0	0	0	0.011	0	0	0	0	0
6504	47	18	0.084	0	0	0	0.056	0	0	0	0	0	0	0
6504	46	18	0	0	0	0	0	0	0	0	0	0	0	0
6504	45	17	0.003	0	0	0	0	0.005	0.008	0.004	0	0	0	0
6504	44	21	0	0	0	0	0	0	0	0	0	0	0	0.008
6504	43	23	0	0	0	0	0	0	0	0	0	0	0	0
6504	42	23	0.016	0	0	0	0	0.004	0	0	0	0	0	0
6504	41	24	0.05	0	0	0	0	0	0.05	0	0	0	0	0
6504	40	24	0.01	0	0	0	0	0	0	0	0	0	0	0
6504	39	23	0.012	0	0	0.015	0.033	0	0	0	0	0	0	0
6504	38	17	0.006	0	0	0	0	0	0	0	0	0	0	0
6504	37	18	0.005	0	0	0	0	0.004	0	0	0	0	0	0
6504	35	23	0.096	0	0	0	0.096	0.008	0	0	0	0	0	0
6504	34	23	0.085	0.01	0	0	0.005	0	0	0	0	0	0	0
6504	33	22	0.005	0	0	0	0.005	0	0	0	0	0	0	0
6504	32	22	0.3	0	0	0.028	0.024	0.008	0.024	0	0	0.008	0.008	0
6504	31	21	0	0	0	0	0	0	0	0	0	0	0	0
6504	30	19	0.002	0	0	0	0	0.002	0	0	0	0	0	0.005
6504	29	14	0	0.01	0	0	0	0	0	0	0	0	0	0
6504	28	17	0.005	0.015	0	0	0	0	0	0	0	0	0	0
6504	27	15	0.03	0.002	0	0	0.06	0	0.011	0.006	0	0	0	0.012
6504	26	17	0.036	0	0	0	0.015	0.054	0.15	0.036	0	0.007	0	0.001
6504	25	18	0	0	0.034	0	0	0.01	0.045	0	0	0.01	0	0.001
6504	24	20	0.018	0.002	0	0	0	0	0	0	0	0	0	0
6504	23	24	0.015	0	0.001	0	0	0.004	0	0	0	0	0	0
6504	22	10	0	0	0	0	0	0	0	0	0	0	0	0
6504	21	26	0.006	0	0.004	0	0	0	0	0	0	0	0	0
6504	20	20	0	0	0	0	0	0	0	0	0	0	0	0
6504	19	38	0.023	0	0.026	0	0	0	0	0	0	0	0	0.011
6504	18	48	0.01	0	0	0	0	0	0	0	0	0	0	0
6504	17	55	0.738	0	0.082	0	0	0	0	0	0	0	0	0
6504	16	40	0.342	0	0.41	0	0	0.008	0	0	0	0	0	0
6504	14	19	0.05	0	0.01	0	0.08	0.01	0	0	0	0	0.01	0.03
6504	13	21	0.02	0	0.014	0	0.03	0.005	0.012	0.007	0	0	0	0.011
6504	11	34	0.004	0	0.005	0	0.001	0	0	0	0	0	0	0
6504	11	34	0.004	0	0.005	0	0.001	0	0	0	0	0	0	0
6504	10	42	0.007	0	0.007	0	0	0.006	0	0	0	0	0	0
6504	8	19	0.013	0	0	0	0	0	0	0	0	0	0	0.117

APPENDIX 3C. (cont.)

CRUISE	STN	D(m)	OLIG	HIR	PONT	ASEL	CHIR	PIS	SPH	AMN	BYTH	V.S	V.T	OTH
6504	7	20	0.021	0.001	0	0	0.007	0.001	0	0	0	0	0	0
6504	6	19	0.001	0	0	0	0.001	0	0	0.007	0	0	0	0
6504	5	24	0.016	0	0	0	0.004	0	0	0	0	0	0	0
6504	4	14	0.027	0.022	0	0	0.001	0	0	0	0	0	0	0
6504	3	19	0.065	0.008	0	0	0.046	0.025	0	0	0	0.025	0	0
6504	2	25	0.184	0.015	0	0.013	0.082	0.033	0	0	0	0	0	0
6504	1	14	0.021	0	0.072	0	0.007	0	0	0	0	0	0	0
6506	83	7	0.096	0.024	0	0	0	0	0	0	0	0	0	0
6506	81	9	0	0	0	0	0	0	0	0	0	0	0	0
6506	80	9	0	0	0	0	0	0	0	0	0	0	0	0
6506	78	10	0.01	0	0	0	0	0	0	0	0	0	0	0
6506	76	10	0	0	0	0	0	0	0	0	0	0	0	0
6506	75	11	0.01	0	0	0	0	0	0	0	0	0	0	0
6506	74	11	0.02	0	0	0	0	0	0	0	0	0	0	0
6506	73	11	0.005	0.015	0	0	0	0	0	0	0	0	0	0
6506	72	12	0.035	0	0	0	0.02	0	0	0	0	0	0	0.045
6506	71	14	0	0	0	0	0	0	0	0	0	0	0	0
6506	70	14	0	0	0	0	0	0	0	0	0	0	0	0
6506	69	12	0	0	0	0	0	0	0	0	0	0	0	0
6506	68	13	0.156	0.016	0	0	0.018	0.018	0.052	0	0	0	0	0
6506	67	14	0.143	0	0	0	0.036	0.039	0.026	0	0	0.016	0	0
6506	66	14	0.116	0	0	0.006	0.04	0.018	0	0	0	0	0.02	0
6506	65	14	0.045	0	0	0.005	0	0.004	0	0	0	0	0.006	0
6506	64	17	0.04	0	0	0	0.04	0	0	0	0	0	0	0
6506	63	18	0.093	0	0	0	0.011	0.048	0	0	0	0	0	0.008
6506	62	20	0.01	0	0	0	0	0	0	0	0	0	0	0
6506	61	22	0.008	0	0	0	0	0.002	0	0	0	0	0	0
6506	60	22	0	0	0	0	0	0	0.05	0	0	0	0	0
6506	59	22	0	0	0	0	0.01	0	0	0	0	0	0	0
6506	58	22	0.02	0	0	0	0	0	0	0	0	0	0	0
6506	57	21	0.01	0	0	0	0	0	0	0	0	0	0	0
6506	56	20	0.015	0	0	0	0	0.005	0	0	0	0	0	0
6506	55	17	0	0	0	0	0	0	0	0	0	0	0	0
6506	54	16	0.01	0	0	0	0	0	0	0	0	0	0	0
6506	53	14	0	0	0	0	0	0.003	0	0	0	0	0	0.006
6506	52	22	0	0	0	0	0	0	0	0	0	0	0	0
6506	51	25	0	0	0	0	0	0.01	0	0	0	0	0	0
6506	50	26	0.016	0	0	0	0	0	0	0	0	0	0.004	0
6506	49	26	0.01	0	0	0	0	0	0	0	0	0	0	0
6506	48	22	0.042	0	0	0	0.078	0	0	0	0	0	0	0
6506	47	17	0.055	0	0	0	0.055	0.01	0	0	0	0	0	0
6506	46	18	0.053	0.008	0	0.005	0.025	0.002	0.005	0	0	0	0	0.002
6506	45	16	0.001	0.04	0	0	0.017	0.018	0.029	0	0	0	0	0.074
6506	44	21	0.01	0	0	0	0	0	0	0	0	0	0	0
6506	43	22	0.114	0	0	0	0.006	0	0	0	0	0	0	0
6506	42	24	0.006	0	0	0	0.004	0	0	0	0	0	0	0
6506	41	23	0.01	0	0	0	0	0	0	0	0	0	0	0
6506	40	25	0.272	0	0	0.014	0.054	0	0	0	0	0	0	0
6506	39	24	0	0	0	0	0.02	0	0	0	0	0	0	0
6506	38	20	0	0	0	0	0.01	0	0	0	0	0	0	0
6506	37	19	0	0	0	0	0.01	0	0	0	0	0	0	0
6506	36	18	0.132	0	0	0.009	0.06	0.03	0	0.006	0	0.003	0	0.06
6506	35	22	0.288	0	0	0.024	0.228	0.024	0.036	0	0	0	0	0
6506	34	22	0.12	0	0	0	0.03	0	0.05	0	0	0	0	0
6506	33	21	0.261	0	0	0.058	0.017	0.017	0.139	0	0	0.058	0	0.029
6506	32	21	0.52	0	0	0.026	0.246	0	0.053	0.009	0	0.026	0	0
6506	31	20	0.075	0.01	0	0.009	0.037	0.007	0	0.004	0	0	0.006	0
6506	30	18	0.242	0.044	0	0	0.132	0.004	0	0.018	0	0	0	0
6506	29	15	0.07	0	0.014	0.049	0	0.007	0	0	0	0	0	0
6506	28	19	0	0.01	0	0	0	0	0	0	0	0	0	0
6506	27	18	0.014	0.005	0	0	0.001	0	0	0	0	0	0	0
6506	26	18	0.047	0	0.085	0	0.005	0.047	0.035	0.025	0	0.005	0	0
6506	25	14	0	0	0.065	0	0	0.014	0	0.007	0	0.014	0	0
6506	24	19	0.04	0	0	0	0	0	0	0	0	0	0	0
6506	23	23	0.643	0.01	0.014	0.048	0.014	0.096	0.096	0	0	0	0	0.039
6506	22	10	0	0	0	0	0	0.005	0.004	0	0	0	0	0
6506	21	25	0.189	0	0.193	0.023	0.023	0.025	0	0	0	0.005	0	0.002
6506	20	18	0.014	0	0.032	0	0	0.003	0	0	0	0	0	0
6506	19	40	0.051	0	0	0	0	0.006	0	0	0	0.003	0	0

APPENDIX 3C. (cont.)

CRUISE	STN	D(m)	OLIG	HIR	PONT	ASEL	CHIR	PIS	SPH	AMN	BYTH	V.S	V.T	OTH
6506	18	48	0.1	0	0.1	0	0	0	0	0	0	0	0	0
6506	17	59	0.128	0	0.029	0	0	0	0	0	0	0	0	0.003
6506	15	20	0.01	0	0	0	0	0	0.04	0	0	0	0	0
6506	14	20	0.022	0	0.023	0	0.027	0	0	0	0	0	0	0.108
6506	13	19	0.01	0.013	0.019	0	0.08	0	0.026	0	0	0	0	0.013
6506	12	20	0	0	0	0.014	0.082	0	0.04	0	0	0	0	0.04
6506	11	31	0.112	0	0.057	0	0.019	0	0	0	0	0	0	0.002
6506	10	45	0.006	0	0.004	0	0	0	0	0	0	0	0	0
6506	9	43	0.01	0	0	0	0	0	0	0	0	0	0	0
6506	8	19	0	0	0	0	0	0	0	0	0	0	0	0
6506	7	20	0.003	0	0.016	0	0.016	0	0.101	0.008	0	0.016	0	0
6506	6	19	0	0	0	0	0.032	0	0	0	0	0	0	0.128
6506	5	24	0.058	0	0	0	0.03	0.002	0	0	0	0	0	0
6506	4	16	0	0	0	0	0	0	0	0	0	0	0	0
6506	3	19	0	0	0	0	0	0	0	0	0	0	0	0
6506	2	26	0.078	0	0	0	0.172	0.01	0	0	0	0	0	0
6506	1	16	0.001	0	0.01	0	0.015	0.01	0	0.005	0	0	0	0
6508	83	10	0	0	0	0	0	0	0	0	0	0	0	0
6508	82	8	0.088	0.028	0	0	0	0.124	0.016	0	0	0	0	0.144
6508	81	8	0.04	0	0	0	0	0	0	0	0	0	0	0
6508	80	9	0.127	0.007	0	0	0.015	0	0	0	0	0	0	0
6508	78	10	0.006	0	0	0	0	0.004	0	0	0	0	0	0
6508	76	10	0.01	0	0	0	0	0	0	0	0	0	0	0
6508	75	10	0	0	0	0	0	0	0	0	0	0	0	0
6508	74	11	0.01	0	0	0	0	0	0	0	0	0	0	0
6508	73	10	0.024	0	0	0	0.064	0.002	0	0	0	0	0	0.02
6508	72	11	0.06	0	0	0	0.34	0	0	0	0	0	0	0
6508	71	12	0.007	0	0	0	0.142	0	0	0	0	0	0	0
6508	70	14	0.003	0	0	0	0.006	0	0	0	0	0	0	0
6508	69	12	0	0.014	0	0.002	0	0	0	0	0	0.003	0	0.001
6508	68	12	0.055	0	0	0	0.088	0.044	0.011	0.022	0	0	0	0
6508	67	13	0	0	0	0	0.01	0	0	0	0	0	0	0
6508	66	13	0.191	0	0	0.007	0.044	0.085	0	0	0	0	0.017	0
6508	65	13	0.126	0	0	0	0	0.019	0	0	0	0	0.005	0.01
6508	62	19	0.024	0	0	0	0	0.016	0	0	0	0	0	0
6508	61	21	0.02	0	0	0	0	0	0	0	0	0	0	0
6508	60	22	0.01	0	0	0	0	0	0	0	0	0	0	0
6508	59	22	0	0	0	0	0	0	0	0	0	0	0	0
6508	58	22	0.08	0	0	0	0	0	0	0	0	0	0	0
6508	57	21	0	0	0	0	0	0	0	0	0	0	0	0
6508	56	19	0	0	0	0	0	0	0	0	0	0	0	0
6508	55	16	0.13	0	0	0	0.01	0	0	0	0	0	0	0
6508	54	16	0.02	0	0	0	0	0	0	0	0	0	0	0
6508	52	21	0	0	0	0	0	0	0	0	0	0	0	0
6508	51	24	0	0	0	0	0	0	0	0	0	0	0	0
6508	50	25	0.01	0	0	0	0	0.01	0	0	0	0	0	0
6508	49	25	0.04	0	0	0	0	0	0	0	0	0	0	0
6508	48	23	0.048	0	0	0	0.106	0.005	0	0	0	0	0	0.002
6508	47	18	0	0	0	0	0.088	0.006	0	0	0	0	0	0.066
6508	46	19	0.013	0.028	0	0.01	0.01	0.02	0	0	0	0	0	0
6508	45	16	0	0	0	0	0	0	0.01	0	0	0	0	0
6508	44	21	0	0	0	0	0	0	0	0	0	0	0	0
6508	43	22	0	0	0	0	0	0	0	0	0	0	0	0
6508	42	24	0.01	0	0	0	0	0	0	0	0	0	0	0
6508	41	23	0.044	0	0	0	0.036	0	0	0	0	0	0	0
6508	40	24	0.01	0	0	0	0	0	0	0	0	0	0	0
6508	39	23	0	0	0	0	0	0	0	0	0	0	0	0
6508	38	19	0	0	0	0	0	0	0	0	0	0	0	0
6508	36	16	0.137	0.01	0	0	0.002	0	0.1	0	0	0	0	0
6508	35	22	0.081	0	0	0	0.054	0.003	0	0	0	0.041	0	0
6508	34	23	0.059	0	0	0	0	0	0.12	0	0	0	0	0
6508	33	22	0.097	0	0	0.019	0.001	0.004	0	0	0	0.009	0	0.018
6508	32	22	0.331	0.011	0	0	0.007	0.005	0	0	0	0	0.003	0.002
6508	31	20	0.06	0	0	0	0	0	0	0	0	0	0	0
6508	30	18	0.002	0	0	0	0.002	0	0	0	0	0	0	0.001
6508	29	15	0	0	0	0	0	0	0	0	0	0	0	0
6508	28	19	0.008	0	0	0	0	0	0.223	0	0	0	0	0.02
6508	27	16	0	0	0	0	0	0	0	0	0	0	0	0
6508	26	18	0	0	0	0	0.012	0.008	0	0	0	0.009	0	0.011

APPENDIX 3C. (cont.)

CRUISE	STN	D(m)	OLIG	HIR	PONT	ASEL	CHIR	PIS	SPH	AMN	BYTH	V.S	V.T	OTH
6508	24	19	0.078	0.03	0	0	0.012	0	0	0	0	0	0	0
6508	23	25	0.374	0.038	0	0.009	0.048	0	0	0	0	0	0	0
6508	22	10	0	0	0	0	0.003	0	0.027	0	0	0	0	0.27
6508	21	25	0.006	0	0.032	0	0	0.002	0	0	0	0	0	0
6508	20	19	0.05	0	0	0	0	0	0	0	0	0	0	0
6508	19	38	0.012	0	0.048	0	0	0	0	0	0	0	0	0
6508	18	46	0.004	0	0.006	0	0	0	0	0	0	0	0	0
6508	17	55	0.24	0.03	0.019	0	0.009	0	0	0	0	0	0	0.007
6508	16	38	0.045	0	0.105	0	0	0	0	0	0	0	0	0
6508	15	20	0	0	0	0	0	0	0	0	0	0	0	0
6508	13	19	0	0	0.001	0	0.08	0	0.019	0	0	0	0	0
6508	12	22	0	0	0	0	0.004	0	0	0	0	0	0	0
6508	11	32	0.005	0	0.014	0	0	0	0	0	0	0	0	0.001
6508	10	42	0.002	0	0	0	0	0	0	0	0	0	0	0
6508	9	46	0	0	0	0	0	0	0	0	0	0	0	0
6508	8	20	0.016	0	0	0	0.004	0	0	0	0	0	0	0.18
6508	7	20	0.038	0	0	0	0.01	0	0.096	0	0	0	0	0.096
6508	6	18	0.008	0	0	0	0	0.004	0.028	0	0	0	0	0.04
6508	5	23	0.005	0	0	0	0.025	0	0	0	0	0	0	0.02
6508	4	14	0	0	0	0	0.001	0	0	0	0	0	0	0
6508	3	18	0.036	0	0	0	0.036	0	0.038	0	0	0	0	0
6508	2	25	0	0	0	0	0.1	0	0	0	0	0	0	0
6508	1	14	0	0	0.018	0	0.018	0.012	0	0	0	0.012	0	0
6510	82	8	0.033	0.017	0	0	0	0	0	0	0	0	0	0
6510	81	8	0	0.005	0	0	0	0	0	0	0	0	0	0
6510	80	9	0	0	0	0	0	0	0	0	0	0	0	0
6510	76	9	0.01	0	0	0	0	0	0	0	0	0	0	0
6510	74	11	0.05	0	0	0	0.045	0	0	0	0	0	0	0.005
6510	73	12	0.005	0	0	0	0	0	0	0	0	0	0	0
6510	72	13	0.022	0.029	0	0.002	0.846	0	0	0	0	0	0	0
6510	71	12	0	0	0	0	0.08	0	0	0	0	0	0	0
6510	70	12	0	0	0	0	0.19	0	0	0	0	0	0	0
6510	68	12	0.01	0	0	0	0.03	0	0	0	0	0	0	0
6510	67	13	0.01	0	0	0	0.19	0	0	0	0	0	0	0
6510	66	13	0.02	0	0	0	0.03	0	0	0	0	0	0	0
6510	65	14	0.039	0	0	0	0.045	0	0.045	0	0	0	0	0
6510	64	16	0	0	0	0	0	0	0	0	0	0	0	0
6510	62	21	0.01	0	0	0	0	0	0	0	0	0	0	0
6510	61	22	0.037	0	0	0	0	0.012	0	0	0	0	0	0
6510	60	21	0	0	0	0	0.01	0	0	0	0	0	0	0
6510	58	22	0.01	0	0	0	0	0	0	0	0	0	0	0
6510	57	22	0	0	0	0	0	0	0	0	0	0	0	0
6510	56	19	0.02	0	0	0	0	0	0	0	0	0	0	0
6510	55	17	0.03	0	0	0	0	0	0	0	0	0	0	0
6510	54	16	0.034	0	0	0	0.006	0	0	0	0	0	0	0
6510	53	15	0.006	0	0	0	0.014	0	0	0	0	0	0	0
6510	52	23	0	0	0	0	0	0.01	0	0	0	0	0	0
6510	50	26	0.07	0	0	0.028	0	0.014	0.168	0	0	0	0	0
6510	49	26	0.01	0	0	0	0	0	0	0	0	0	0	0
6510	48	24	0.03	0	0	0	0.17	0	0.05	0	0	0	0	0
6510	47	18	0.005	0	0	0	0	0	0	0	0	0	0	0
6510	46	18	0	0	0	0	0	0	0	0	0	0	0	0
6510	43	22	0.009	0	0	0	0	0.001	0	0	0	0	0	0
6510	42	24	0.004	0	0	0	0	0	0	0	0	0	0	0
6510	41	25	0.01	0	0	0	0	0	0	0	0	0	0	0
6510	40	25	0.024	0	0	0.004	0.052	0	0	0	0	0	0	0
6510	39	24	0.01	0	0	0	0	0	0	0	0	0	0	0
6510	38	19	0.069	0	0	0.001	0	0	0	0	0	0	0	0
6510	37	17	0	0	0	0	0	0	0	0.005	0	0	0	0
6510	36	16	0.002	0	0	0	0.002	0	0	0	0	0	0	0
6510	35	22	0.01	0	0	0	0	0	0	0	0	0	0	0
6510	34	23	0.319	0.045	0	0.013	0.045	0.004	0	0	0	0	0	0.022
6510	33	22	0	0	0	0	0	0	0	0	0	0	0	0
6510	32	21	0.01	0	0	0.002	0.003	0	0	0.015	0	0	0	0
6510	30	20	0	0	0	0	0.004	0	0	0	0	0	0	0
6510	28	18	0	0.028	0	0	0.042	0	0	0	0	0	0	0
6510	27	16	0.014	0	0	0	0.013	0	0.053	0	0	0	0	0.001
6510	24	21	0.08	0	0	0	0	0	0	0	0	0	0	0
6510	23	23	0.565	0	0	0.032	0.032	0.019	0	0	0	0	0	0

APPENDIX 3C. (cont.)

CRUISE	STN	D(m)	OLIG	HIR	PONT	ASEL	CHIR	PIS	SPH	AMN	BYTH	V.S	V.T	OTH
6510	22	10	0.002	0	0	0	0.023	0	0.023	0	0	0	0	0.001
6510	21	25	0.005	0	0.01	0	0.036	0.01	0	0	0	0	0	0
6510	19	41	0.156	0	0.084	0	0	0	0	0	0	0	0	0
6510	18	46	0.004	0	0.005	0	0	0	0	0	0	0	0	0
6510	17	60	0.05	0	0	0	0	0	0	0	0	0	0	0
6510	16	42	0.048	0	0.001	0	0	0	0	0	0	0	0	0
6510	15	20	0.035	0.028	0	0	0.007	0	0	0	0	0	0	0
6510	14	20	0.1	0	0.022	0	0.044	0	0	0	0	0	0	0.053
6510	13	20	0.006	0	0	0.004	0.013	0	0	0	0	0	0	0.006
6510	12	21	0	0	0	0	0	0	0	0	0	0	0	0
6510	11	34	0.021	0	0.044	0	0	0.005	0	0	0	0	0	0
6510	10	43	0.03	0	0.007	0	0	0.007	0	0	0	0	0	0
6510	9	45	0.005	0	0	0	0	0	0	0	0	0	0	0
6510	8	21	0	0	0	0	0	0	0	0	0	0	0	0
6510	7	21	0	0	0	0.006	0.049	0	0	0	0	0	0	0.2
6510	6	19	0	0	0	0	0	0	0	0	0	0	0	0.021
6510	5	25	0.01	0	0	0	0.017	0.022	0	0	0	0	0	0
6511	1	16	0.015	0	0.045	0	0.015	0.012	0.06	0	0	0.003	0	0
6511	2	26	0.108	0.01	0	0.02	0.002	0.04	0.02	0	0	0	0	0
6511	3	19	0.142	0.038	0	0	0.741	0.005	0	0	0	0.014	0	0.009
6511	4	15	0	0.005	0	0	0.005	0	0	0	0	0	0	0
6511	5	25	0.15	0	0	0.01	0	0.01	0	0	0	0	0	0.17
6511	7	20	0.091	0	0.003	0	0.001	0.01	0.21	0	0	0	0	0.033
6511	8	21	0	0	0	0	0	0	0	0	0	0	0	0
6511	10	46	0.009	0	0.009	0	0	0.009	0	0	0	0	0	0.003
6511	11	33	0.149	0	0.05	0	0	0	0	0	0	0	0	0.001
6511	12	21	0.021	0	0	0.024	0.014	0.002	0	0	0	0	0.003	0.005
6511	13	19	0	0.002	0	0	0	0	0	0	0	0	0	0
6511	14	19	0.05	0	0.045	0	0.017	0.001	0	0	0	0	0	0.026
6511	15	19	0	0	0	0	0	0	0	0	0	0	0	0
6511	17	60	0.594	0.013	0.053	0	0	0	0	0	0	0	0	0
6511	18	48	0.005	0	0	0	0	0	0	0	0	0	0	0
6511	19	39	0.198	0	0.101	0	0	0	0	0	0	0	0	0.001
6511	21	23	0.048	0	0.18	0	0.002	0.01	0	0	0	0	0	0
6511	22	10	0	0	0	0	0	0	0.099	0	0	0.011	0	0
6511	23	24	0.02	0	0	0	0	0	0	0	0	0	0	0
6511	24	20	0.054	0	0	0	0.003	0	0	0	0	0	0	0.013
6511	25	14	0	0	0.021	0	0	0.013	0.013	0.046	0	0.021	0	0.046
6511	26	19	0	0.003	0	0	0	0	0	0	0	0	0	0
6511	27	17	0.006	0	0	0	0.004	0	0	0	0	0	0	0
6511	28	19	0.001	0	0	0	0.003	0	0.102	0	0	0	0	0.003
6511	29	16	0.027	0	0	0	0.033	0	0	0	0	0	0	0
6511	30	20	0	0	0	0.007	0.012	0	0	0	0	0	0	0
6511	31	20	0.01	0	0	0	0	0	0	0	0	0	0	0
6511	32	22	0.194	0	0	0.006	0.004	0	0	0	0	0	0	0.005
6511	33	22	0.141	0	0	0.004	0.003	0	0	0	0	0	0	0.001
6511	34	22	0.004	0	0	0	0.001	0	0.095	0	0	0	0	0
6511	35	21	0.265	0	0	0	0.003	0	0	0	0	0	0	0
6511	36	16	0.006	0	0	0	0.004	0	0	0	0	0	0	0
6511	38	18	0.045	0.005	0	0	0	0	0	0	0	0	0	0
6511	39	23	0.007	0	0	0	0.003	0	0	0	0	0	0	0
6511	40	24	0	0	0	0	0	0.006	0.024	0	0	0	0	0
6511	41	23	0.004	0	0	0	0	0	0	0	0	0	0	0
6511	42	24	0.05	0	0	0	0	0	0	0	0	0	0	0
6511	44	21	0	0	0	0.002	0	0.001	0	0	0	0	0	0
6511	45	16	0.002	0	0	0.002	0	0.001	0	0	0	0	0	0
6511	83	7	0.001	0.066	0	0	0	0	0.122	0	0	0	0	0
6511	81	9	0.029	0	0	0	0	0	0.211	0	0	0	0	0
6511	80	8	0.002	0	0	0	0.047	0	0	0	0	0	0	0
6511	78	10	0.004	0	0	0	0.096	0	0	0	0	0	0	0
6511	76	10	0.003	0	0	0	0	0	0	0	0	0	0	0
6511	75	11	0.02	0	0	0	0	0	0.03	0	0	0	0	0
6511	74	11	0	0	0	0	0	0	0	0	0	0	0	0.1
6511	73	9	0	0	0	0	0	0	0	0	0	0	0	0
6511	72	13	0.001	0	0	0	0.188	0.001	0	0	0	0	0	0
6511	71	14	0.00	0	0	0	0	0.06	0	0	0	0	0	0
6511	70	13	0	0	0	0	0.08	0	0	0	0	0	0	0

APPENDIX 3C. (cont.)

CRUISE	STN	D(m)	OLIG	HIR	PONT	ASEL	CHIR	PIS	SPH	AMN	BYTH	V.S	V.T	OTH
6511	69	12	0	0	0	0.003	0	0	0	0	0	0	0	0.001
6511	68	14	0.11	0.011	0	0	0.011	0.033	0.022	0	0	0	0	0.022
6511	67	13	0.035	0	0	0	0.01	0.024	0	0	0	0	0	0
6511	66	13	0.15	0	0	0.002	0	0.048	0	0	0	0	0	0
6511	65	14	0.162	0	0	0.03	0.075	0.03	0.025	0	0	0.006	0	0.001
6511	64	16	0.05	0	0	0	0	0	0	0	0	0	0	0
6511	63	18	0.07	0	0	0	0	0	0	0	0	0	0	0
6511	61	22	0.007	0	0	0	0	0.002	0	0	0	0	0	0
6511	58	23	0.05	0	0	0	0	0	0	0	0	0	0	0
6511	57	22	0.005	0	0	0	0	0	0	0	0	0	0	0
6511	56	20	0.006	0	0	0	0	0	0	0	0	0	0	0
6511	55	17	0.09	0	0	0	0	0.009	0.001	0	0	0	0	0
6512	1	13	0.009	0	0	0	0.012	0	0.084	0.008	0	0.006	0	0.01
6512	2	23	0.073	0.002	0	0.073	0.018	0	0	0	0	0	0	0.055
6512	3	16	0.06	0.015	0	0	0.015	0.007	0.003	0	0	0.001	0	0.022
6512	4	11	0.003	0	0	0	0	0	0	0	0	0	0	0.002
6512	5	22	0.235	0.004	0	0	0.006	0	0	0	0	0.004	0	0.001
6512	6	16	0.006	0.013	0	0	0	0	0	0.006	0	0	0	0.156
6512	7	16	0.03	0.008	0	0.028	0.03	0	0.015	0	0	0.015	0	0.023
6512	65	12	0.16	0.006	0	0.04	0.002	0.02	0.05	0	0	0.007	0.08	0.004
6512	66	13	0.441	0.02	0	0.02	0.154	0.068	0	0	0	0	0.062	0.003
6512	67	10	0	0	0	0	0	0	0	0	0	0	0	0
6512	68	10	0.17	0.118	0	0	0.059	0.015	0	0	0	0	0	0.128
6512	69	11	0	0	0	0	0	0	0	0	0	0	0	0
6512	73	10	0.268	0.007	0	0	0.395	0	0	0	0	0	0	0
6512	74	11	0.203	0	0	0	0.014	0	0.058	0	0	0.014	0	0
6512	75	10	0.366	0	0	0	0.00[illegible]	0	0	0	0	0	0	0
6512	76	8	0.001	0	0	0	0.079	0	0	0	0	0	0	0
6512	78	8	0	0	0	0	0	0	0	0	0	0	0	0
6512	80	6	0	0	0	0	0	0	0	0	0	0	0	0
6512	81	9	0.025	0	0	0	0	0	0.02	0.005	0	0	0	0
6512	82	8	0.024	0.024	0	0	0.009	0.006	0.288	0.12	0	0.001	0.002	0.126
6512	83	5	0.017	0.017	0	0	0.021	0.003	0.105	0.01	0	0	0	0.175